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EDITORIAL.

EUROPEAN CHRONICLES.

ECONOMICS OF VETERINARY TEACHING.—Under this title the *Veterinary Journal* for April last has a very excellent article in behalf of a Scottish college. Our worthy colleague gives, as a support for its claim, figures which seem so ridiculous that it can scarcely be understood how a staff of good worthy teachers can be expected. It acknowledges for the teachers fees which vary from 30 pounds to 125 guineas for each session, and it bases those figures on the presence of a class of 100 students. In his remarks the editor said: "Of course there will always be enthusiasts in the country, men who are born teachers and must find an outlet for these powers at whatever sacrifice to themselves. There will be unselfish men, easy-going men, and martyrs of science, who will take the posts and do credit to them, but is it right to take advantage of our neighbors' zeal or good nature?"

From 30 to 125 guineas for a session's work—say from 150 to 625 dollars; and our English colleague complains, and calls those who have received that amount martyrs! Well, well; he must know but little of the economics of veterinary teaching in the United States, or what would he say? We believe that the majority of the veterinary teachers who have for years done work, as good, thorough and conscientious as it could be, would consider the fees that our *confrère* presents as satis-

factory, theirs having been for years and remaining yet we know far below the ones he mentions. Why should it be so? It is because, so far, and with very few exceptions, veterinary teachings have been mostly private undertakings, and that only in the two or three institutions which were endowed special fees were paid to teachers; but if rumor is true these last schools were obliged in some way or another to change their mode of operation; yes, suspend work!

Veterinary teaching as a private undertaking has no business to exist.

Veterinary institutions that cannot afford to remunerate their teachers in a proper manner cannot expect to ask much from their faculties unless, as has been the case in countries where veterinary education was established but recently.

Veterinary schools in large numbers, as we are threatened to see them in some parts of the world, would be much better if that number was reduced, if the few colleges which would remain were patronized by the State, supported by the State, and their faculties sufficiently remunerated by the State.

The remarks of the worthy editor of the *Veterinary Journal* are well to the point, and although the plan he suggests may receive less of private support, there can be no doubt that by them he has made public and corrected a too much admitted error, that veterinary teaching was a sinecure. It is not in England, nor in Scotland, and far less in the United States, as we know by long experience. Is it better on the continent, where the schools are under the control of the State? That is the question.

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A Goat Dairy Farm, and Its Advantages.—At one of the last meetings of the *Société de Médécine et de Chirurgie Pratiques* in a long discussion on the treatment of tuberculosis, Dr. Ch. Levassort took up the question of the influence of milk as a factor of the contagion, and after a severe criticism on the condition of the cow's milk, brought about the advisability of resorting to the use of goat's milk as food for children, in

preference to that of the cow, when by some cause or another human milk could not be given to them.

His principal remarks were to the effect that cows are subject to tuberculosis; their milk is often the carrier of the bacilli. Cases of contagion on record are quite numerous. Pasteurization is scarcely a sure guard; boiling only seems to give this result. The milk of the mother is the perfect food. Between the two, the milk of the goat finds its calling. Tuberculous bacilli are very rare in it, and in organic principles it is close to that of women; almost equal to it. In antiquity goats were with women considered as the true nurses, etc., etc.

The subject is not new; the question has already been agitated even during the congress of 1900, and will probably be considered again in that which is to be held this summer in England.

At any rate, our friend Pion, in the *Semaine Veterinaire*, tells us that there is actually in Paris an establishment where goats are kept strictly for their milk production.

For years back visitors to the French capital were awakened by the sounds of pandean pipes, played by a man, a shepherd from the mountains of Switzerland (unless he came from the suburbs or other places closer by). He was accompanied by a flock of eight or ten goats, with pendulous udders, gorged with milk, which he would milk and sell. Another trade which will have seen its end with the birth of the twentieth century, providing the farm for the goats is a success.

At any rate, there will be great probability that the milk obtained from the new farm will be safer to consume than that of the Swiss shepherd. On the farm the stock will be submitted to every sanitary precaution; they will receive good food, be kept with the best rules of hygiene, will be tested with tuberculin; while the poor beasts of which they will take the place were, no doubt, deprived of such good treatment, and in many instances had to satisfy their appetites by searching for and eating whatever they could find in the ash barrels or boxes in the streets; and every one knows that goats are not very particular as to the selection of their *ménu*. A. L.

ATLANTIC CITY, SEPT. 3, 4, 5 AND 6.

All arrangements, save a few details, are now complete for the thirty-eighth annual meeting of the American Veterinary Medical Association, which convenes in the new Hotel Rudolph at Atlantic City on Sept. 3, and unless all signs fail we are to have a full and glorious meeting. Details of the preparations and programme will be found in the news pages, and we are sure there is enough of vital importance to engage the attention of every veterinarian in this country. Aside from this vast array of material, the recent announcement of Prof. Koch before the Tuberculosis Congress of London that there is no relationship between the bacilli of human and bovine tu berculosis will engage the attention of those distinguished sanitarians who form so large and valuable a part of the association. This disturbing declaration of one high in the ranks of veterinary scientists will throw a huge stumbling block in the way of progress along the line of preventive medicine, and be taken up and reechoed by those who have right along striven to retard the work of checking the spread of the "white plague," and Dr. Koch's conclusions, if deemed fallacious, should be stamped as such in no uncertain manner at this meeting.

Every item of the programme appeals to you. Be ready for Atlantic City the first week in September.

A SCIENTIFIC INVESTIGATION AND A PRACTICAL RESULT.

A fatal disease of calves in Ireland has for a few years so decimated the herds of some counties as to render the losses too great for the unfortunate stockmen to bear. The British government instituted in April of this year an investigation to discover the cause and to suggest a preventive. The eminent veterinary scientist, Prof. Nocard, of France, was intrusted with this important mission, and how well he has justified the confidence reposed in him will be shown in the report made to the Department of Agriculture of England before he returned to

France. Through the special facilities which the REVIEW enjoys of securing from first hands the earliest account of important scientific movements in Europe, it is enabled to present to its readers a translation of the document as presented to the Société Centrale de Medécine Veterinaire by the distinguished investigator and this almost as quickly as it is published upon the Continent. The article referred to is entitled "A New Pasteurellose: White Scour and Lung Disease of Calves in Ireland," and will be found in the department of "Original Articles."

A TUBERCULOSIS SENSATION.

As the forms for this number of the REVIEW are closing, Prof. Robert Koch, the eminent German scientist, has startled the medical world by a statement of his remarkable conclusions upon the subject of tuberculosis before the London Congress. While we are, of course, unable to present to our readers at this time the full text of the paper which he read, we shall do so as early as possible. The distinguished professor has become convinced that there is nothing in common between human and bovine tuberculosis, and is persuaded that the human family cannot be inoculated by the bacillus of the disease of cattle, and therefore all the precautions exercised throughout the civilized world to prevent the contraction of the disease in humans through the meat and milk of tuberculous cattle are worse than useless. Judgment should be withheld until the mode of reasoning by which his conclusions have been reached are known. If Prof. Koch is correct, then a great many eminent investigators are wholly wrong, for our own Bureau of Animal Industry has staked its reputation upon the fatherhood of the bacillus tuberculosis being identical in all species of animals from man to the guinea-pig.

THE programme of the meeting of the New York State V. M. Society, to be held at Ithaca, Sept. 10 and 11, will be found elsewhere, and is full to overflowing.

ORIGINAL ARTICLES.

BOVINE TUBERCULOSIS.

PERIOD OF INCUBATION—AGE OF LESIONS—EXPERIMENTAL RESEARCHES.

By MM. Nocard and Rossignol.

Translated for the Review by J. F. Winchester, D. V. S., Lawrence, Mass.

(*Continued from page 257.*)

BEGINNING OF THE EXPERIMENTS.

The experiments were commenced May 8 at Poully le Fort. There was a large gathering of veterinarians and farmers at the meeting, although the weather was disagreeable.

Mr. Constant, inspector of sanitary bureaus, represented the Minister of Agriculture; the School of Alfort, by Profs. Nocard and Moussu; the Conseil General of Seine, by Mr. Duprez, veterinarian chief of the sanitary bureau; the Conseil General of Seine et Oise, by Mr. Savary, Conseiler General of Boissy Saint Leger; the Conseil General of Seine et Marne, by M. A. Brandin, President of the Agricultural Society of Mélun, and Conseiler General of Brie, Comte Robert.

The Agricultural Society of Mélun, by Messrs. René Auberger, Chantecler, Delamarre, and Paillet.

The Agricultural Society of Fontainebleau, by Mr. Cornet. The Society of Practical Veterinary Medicine, by its President, M. Guillemard; Vice-President Moreau, Secretary Morel, and Messrs. Liautard, Holland, Savary, Jr., and Paul Rossignol. The army veterinarians were represented by Messrs. Touby and Roup of the 18th Dragoons, Joly and Bourgueil of the 7th Dragoons and Deysine of the 5th, and last Mr. Felix Buxareo Oribe, the Honorable Secretary of the Uruguay legation, was in attendance.

The twelve animals were marked by numbers on the right horn, divided into six lots and submitted to the following experiments:

First lot consisted of animals 1, 2, 3 and 4 and were submitted to the gastro-intestinal tubercular infection. In order to accomplish this 475 grams of pleural tubercles, cut fine and mixed with bran, were given each subject.

No. 3 was the only one that ate the whole of the mixture; No. 2 ate about 100 grams mixed with three (3) liters of water.

Cows Nos. 1, 2 and 4 having refused to eat the tubercular food, they were each drenched, May 14th, with 250 grams of tuberculous material taken from a mediastinal gland. The emulsion was made with lukewarm water.

The infecting material for the other subjects consisted of an emulsion of a growth of Koch's bacilli, taken from the milk of a tubercular cow, the emulsion being twice filtered through fine cambric.

Four guinea-pigs were inoculated under the skin of the thigh with one drop of this emulsion, causing them to die between the 29th and 42d day after the inoculation.

The *second* lot consisted of Nos. 5 and 6, and they were made to inhale tubercular dust. This operation was performed by Mr. Nocard and his laboratory clerk. To accomplish this a cylinder of ducking two metres long, kept open by metal hoops and closed at one end, was used. A strap passed around the neck held the bag in place as high as the eyes, and a circular strap held the bag tightly against the face, permitting the animal only to breathe the air contained in the bag. A Collin insufflator was fixed into the small end of the apparatus and by this means 3 cubic centimetres of impalpable tubercular dust, obtained by the dessication at 37° of the emulsion above referred to, then pulverizing and sifting the dessicated matters, it was introduced into the air contained in the bag.

The operation lasted five minutes for cow No. 5 and four and one-half minutes for cow No. 6.

The *third* lot consisted of cows No. 7 and 8. The experiment on cow No. 7 was made with the aid of the cloth bag

above described, and a large Guasco atomizer. In six (6) minutes 100 cubic centimetres of a saturated tubercular emulsion was atomized.

For cow No. 8 a common atomizer had to be used, the other having got out of order, and the infecting tubercular emulsion had to be injected in the immediate vicinity of the nostrils, and in five minutes 100 cubic centimetres was so atomized.

The *fourth* lot consisted of cow No. 9, and an intraveinal injection of 10 cc. of the tubercular emulsion was made.

Fifth lot were milk cows Nos. 10 and 11. They were cast on a straw bed, a fine round-ended tube was passed through the teat, so as not to wound the gland or the mucous membrane, and 5 cc. of tubercular emulsion was injected in each of the left anterior and right posterior mammæ.

Sixth lot was cow No. 12, about to calve. 10 cc. of tubercular emulsion was injected into her trachea.

It was agreed that her calf, if born alive, would receive every day not only its mother's milk, but also that of the two cows, Nos. 10 and 11, already submitted to the intra-mammary injection.

It was agreed that the twelve cows submitted to the experiment shall every six days be subjected to the tuberculin test.

Each lot will be considered in succession from the beginning of the experiment to the killing of the animals.

FIRST LOT—GASTRO-INTESTINAL INFECTION.

This was composed of cows Nos. 1, 2, 3, and 4, and they resisted the tubercular infection for a very long time, and at the time of their death they were apparently in the best of health.

On the 32d day, that is the 9th of June, there was observed a slight reaction in consequence of the tuberculin injection, the 8th, with cows No. 3 and 4.

No. 3.—6 A. M., 39.5; 9 A. M., 39.5; NOON, 38.6; 3 P. M., 39.1.

No. 4.—6 A. M., 39.6; 9 A. M., 38.9; NOON, 38.2; 3 P. M. 39.3.

They were sent to Alfort the same evening, arriving there the morning of the 10th.

Autopsies.

Cow No. 3.—The lungs, the pleura, the pericardium, the bronchial and mediastinal glands are absolutely sound. The liver is affected with distomatosis to a slight degree, but its ganglions are normal; the same of the spleen, the kidneys, the pancreas, the uterus, and all the lymphatics of the abdominal cavity. The mucosa of the mouth, the velum of the palate, the pharynx, the larynx, the subglossal and retropharyngeal ganglions present no noticeable alteration.

The intestine is opened its entire length; on the mucosa of the ilium are found numerous pisiform nodosities filled with greenish pus or suppuration. They are probably parasitic. The only suspicious lesion found is at the beginning of the large intestine; the mucous membrane appears thickened, to be infiltrated, the congested parts being more compact than elsewhere; portions of the mucous membrane are removed and put in absolute alcohol for bacteriological examination.

This examination has shown a pronounced leucocytic infiltration of the deep strata of the mucosa, such infiltration extending between the glandular *culs-de-sac;* but it was impossible to find a single Koch's bacillus. This autopsy has not revealed the tubercular lesion which caused the tuberculin reaction.

Cow No. 4.—The viscera of the thoracic and abdominal cavities do not present any tubercular lesions. However, we preserved for histological examination several Peyer's glands which appear thickened and granular. The mucous membrane of the mouth, the velum of the palate and the pharynx are apparently sound, but the retropharyngeal ganglions are enlarged, filled with a serosity and evidently infiltrated in their cortical layer with tubercular granulations. The tubercular nature of the ganglionic lesion has been confirmed by the bacteriological examination; not so with Peyer's glands. The cellular infiltration of the deep layer of the mucosa did not show Koch's bacillus.

Cows Nos. 1 and 2 were kept until July 1st, when they were sent to Alfort and killed and autopsied.

The tubercular infection did not begin to manifest itself in Cow No. 2 until the 21st of June; that is, 44 days after the contamination. Tuberculin injected June 21st gave the following temperatures:

6 A. M., 40; 9 A. M., 40; NOON, 39.7; 3 P. M., 39.5; 6 P. M., 39.4.

Animal No. 1 was tested eight times without giving a reaction.

Cow No. 1 revealed all the organs and tissues normal with the exception of a large number of pisiform nodosities in the intestines of a parasital nature.

Cow No. 2.—The mouth, the velum of the palate, the pharynx, the larynx and the trachea have no noticeable lesion. The retropharyngeal glands on the right side are distended, hard and knotty and present on cutting a number of miliary yellowish caseic tubercles. The other pharyngeal glands and those of the throat region are normal.

A careful examination of the intestinal mucosa shows a few Peyer's glands thickened in places and suspected of tubercular infiltration; in their vicinity the mesenteric glands show in their cortical layer a few miliary, yellowish and caseic tubercles.

The right lung shows on its anterior lobe a nodule, yellowish, caseic, not softened nor calcified, the size of a large pea; the bronchial glands normal.

SECOND LOT, COWS 5 AND 6.—INHALATION OF TUBERCULAR DUST.

Until May 27 these two animals appear in the best of health and as a result of the tuberculin test Cow No. 6 shows a reaction at 5.30 A. M. 39.1, 8.30 A. M. 39.1, 11.30 A. M. 39.4 and at 2.30 P. M. 39.5. The next day, May 28, the temperature becomes normal. The same animal injected with tuberculin June 1 gives on June 2 at 5.30 A. M 40, 8.30 A. M. 39.7, 11.30 A. M. 40.1, at 2.30 P. M. 40; the hypothermic state maintained itself until the next morning, 39.5. Tested a third time, June 8, the

reactions on the 9th as follows: 3.30 A. M. 39.5, 6.30 A. M. 40, 9.30 A. M. 39.7, 12.30 P. M. 39.6.

The continued use of tuberculin did not prevent a reaction.

Close observation of this animal from the first reaction showed short breathing, a certain cough, short, irregular at rather long intervals. Good appetite and airiness lasted until her departure on the 9th of June.

As regards Cow No. 5, the infection did not manifest itself until after the tuberculin test of June 8th, when the following temperatures were noted: 3.30 A. M. 40, 6.30 A. M. 39.5, 9.30 A. M. 38.6, 12.30, 39.8. This high temperature remained the whole of next day, 39.5.

June 14th she was again injected with tuberculin and the following temperatures were noted: 6 A. M. 41, 9 A. M. 40, NOON 40.3, 3 P. M. 40-6, 6 P. M. 40.4; the hypothermic state lasted for forty-eight hours.

On the 21st of June the resistance to the action of tuberculin began to manifest itself, but it ended on the 28th of same month. Both animals were really infected; No. 5 on the 32d day; No. 6 on the 19th day. With both immunity was very slight and slow to come.

Autopsies.

Cow No. 5 (killed July 2d).—The mouth, the pharynx, the larynx and the trachea, the glands of the throat region and of the pharynx appear to be free from all lesions. Both lungs are filled with a considerable number of miliary tubercles, the sizes of which vary from those of a cabbage seed to those of a small pea; many are still translucent; many also show in the centre an opaque, whitish or yellowish spot; a few, the larger, are hard, dense and yellow. A cut shows them to be formed of a fibrous shell containing caseic substance, not yet softened or calcarious. Nowhere does the pulmonary tissue appear to be congested or inflamed, not even in their immediate vicinity. All the bronchial and mediastinal glands are hypertrophied, hard, knotty, overfilled with a milky serosity; they show in their cortical layer a great number of miliary

tubercles, which are yellow, hard, but not softened or caleified.

The viscera of the abdominal cavity and glands are normal.

Cow No. 6 (killed June 10th).—The mouth, the velum of the palate, the pharynx, the larynx and the trachea do not present any noticeable lesion. The pharyngeal glands are rather large and granular on cutting (histological examination has shown them to be sound).

Both lungs are filled with fine miliary granulations, most of them being translucent, a few being opaque about the centre. All have developed under the pleura or on the periphery of the lobules; there is no trace of congestion or inflammation of the pulmonary tissue in their immediate vicinity. The bronchia being incised their whole length show the mucous membrane to be intact. The bronchial glands are hypertrophied, distended with a serosity, but free from all noticeable lesions, but the posterior mediastinal glands are almost all affected, but in different degrees; one has increased its volume ten-fold; its cortical layer literally filled with very fine nodules, which are still translucent, being at the first stage of evolution.

The viscera of the abdominal cavity and their ganglions are normal.

THIRD LOT, COWS 7 AND 8—INHALATION OF TUBERCULOUS EMULSION.

May 21, Cow No. 7 gives a slight reaction, 39.5, but the reaction was not marked until the 27th, when at 5.30 A. M. 39.7, 8.30 A. M. 39.4, 11.30 A. M. 39.3, 2.30 P. M. 39.4. The 2d of June the reaction is hardly noticeable, immunity becoming almost perfect until the last moment.

In this particular case the period of incubation has been from 13 to 19 days. As to Cow No. 8 she did not react until the 27th of May, that is on the 19th day, when the temperatures were at 5.30 A. M. 39.8, 8.30 A. M. 34.4, 11.30 A. M. 39.7, 2.30 P. M. 39.5.

The 2d of June the reaction was more pronounced than on May 27, being at 5.30 A. M. 40.7, 8.30 40.5, 11.30 40.9, 2.30 P. M. 40.7, and June 3 the temperature was 40. June 9 again re-

acted but to a less degree. This animal was killed June 10 and No. 7 July 2d.

With the animals of this lot immunity was slow and irregular.

With the exception of a few coughing spells these animals remained in apparent health.

Autopsies.

Cow No. 7 (killed July 2d).—The mouth, the velum of the palate, the pharynx, the larynx and the trachea do not present anything abnormal. The sub-glossal and pharyngeal glands are swollen and succulent, but they do not seem to show any tubercular lesion.

Both lungs are infiltrated with a considerable number of tubercles, miliary or pisiform, sound, hard and firm. A cut shows them to be formed of a thick fibrous shell, containing a small caseic focus nowhere softened or calcified.

The ganglions of the mediastinum are almost all infiltrated with miliary nodules in process of caseification, but their lesions are not as gross as those of the glands of Cow No. 5.

The bronchial glands present the same alteration, only a little more advanced. All the viscera of the abdominal cavity and their lymphatics seem to be normal.

Cow No. 8 (killed June 10).—The mouth, the velum of the palate, the pharynx, the larynx and the trachea are sound. Two retropharyngeal glands are hypertrophied and saturated with a serosity. They are infiltrated at their anterior extremity, with a few miliary tubercles, translucent or opaque, not yet caseified.

Both lungs are teeming with extremely fine miliary tubercles and the most are translucent; a few attain the size of a small pea; their centre is opaque, whitish and caseic, having but a thin envelope of gray tissue, rather transparent.

The left bronchial gland and the two large ganglions of the posterior mediastinum are hypertrophied, hard and knotty to the touch, their cortical layer is infiltrated with a large number of fine tub erculous granulations, some translucent, others opaque and caseic.

Excepting some distomatosis of the liver the organs of the abdominal cavity show no apparent lesion.

(*To be continued.*)

A NEW PASTEURELLOSE: WHITE SCOUR AND LUNG DISEASE OF CALVES IN IRELAND.

By Prof. E. Nocard *

Since several years, breeders of the southwest of Ireland suffer much; they lose more than half of their calves. They mostly die in a few days, during the first week from their birth, after having a white, foaming, incoercible diarrhœa (*white scour*): others, in smaller number, die later, when eight or ten weeks old, after exhibiting signs, not well marked, of lung diseases; at the post-mortem, numerous and large caseous or suppurative lesions of the pulmonary structures are observed (*lung disease*)

The epizoötic prevails principally in the counties of Limerick, Cork, Clare and Tipperary. All the farms do not have it; some have never lost a calf with white scour; but where it breaks out, it makes enormous ravages. One farmer has lost more than 100 calves in three years; another has saved only one out of 35 born in 1900; with a third 22 have died out of 29; in a fourth 60 out of 70. Generally speaking, it may be said that, where the disease prevails, the mortality goes far beyond 50 per cent. of the births.

The Department of Agriculture for Ireland has done me the honor to give me the scientific study of this severe disease; I have been three weeks at Limerick, and in this short time which I thought would not be sufficient to organize my work, I have been fortunate enough to be able to elucidate the etiology of the disease and to suggest a simple and practical prophylaxy, which I hope will prove efficacious.

Allow me to present you the report that I have addressed to the Chief of the Department of Agriculture.

* Remarks made by the author at the Soc. Centrale. (Translated by Prof. A. Liautard, M.D.V.M.)

To Sir Plunkett, Vice-President, etc.:

SIR:—Allow me before leaving Dublin to report to you, at least briefly, the results of my short but laborious campaign that with the precious assistance of Prof. Mettam, Colonel Steel and Mr. Ryan, I have just carried out in the southwest of Ireland.

I.—First of all, allow me to say, that we have been able to establish the close relation that existed between "white scour" and the "lung disease."

White scour appears early after birth and kills calves in a few days; the evolution of the lung disease is much slower; the sick do not die much before the eighth week. Besides this the symptoms presented by the sick animals and the lesions observed at the post-mortems are very different, in such a way that one would be tempted to believe that the diseases have nothing in common and that they are entirely distinct one from the other. However, it was known that the lung disease appears only where white scour has prevailed, and interested farmers have observed that calves that have recovered from a mild attack of white scour are, so to speak, condemned for the majority of them to contract the lung disease.

The post-mortems that we have made during our inquest show the correctness of this opinion.

Although lung disease is rare in April,* we had the opportunity to observe one of the most characteristic cases, in a six weeks calf, which a few days after birth had had a temporary diarrhœa and which since had shown no other symptoms except a lack in general condition, some cough and labored breathing. The owner said he had lung disease. (In three years he had lost more than 100 calves, and he knew, by long and sad experience, that the few subjects that seemed recovered from white scour die of lung disease when they are about two months old.) The animal was killed; he had an enormous pulmonary lesion; the two posterior thirds of the left lung formed a compact mass, very heavy; on its surface, which was here and there bosselated and fluctuating, the pleura was thickened, covered with vegetations

* The month when the investigation was made.

and adherent by fibrous bands to the diaphragm and to the hypocardia. The tissue of the lung was the seat of an extensive sclerosis and hollowed with numerous cavities filled with thick grumous pus of a dirty white color, resembling mortar.*

Besides this important lesion, there was another, much smaller and evidently more recent; the anterior lobe of the same lung was the seat of grey hepatization with small caseous centres, analogous to those that we had previously observed in calves suffering with the slow form of white scour. And in all these cases the bacteriological examination of the alveolar exudate revealed the presence of the same pathogenous microbe.†

Finally, if in the acute forms of white scour the pulmonary lesions are missing, they are almost constantly present in the subacute forms, which develop between four and six days; in general they are not extensive, and affect the form of small diffused centres of broncho-pneumonia, of œdematous catarrhal or nodular pneumonia, or simply of atelectasia; but there is no doubt that those are the beginning, the initial phases of lung disease, because there also the same pathogenous microbe is found. Hence, it is easier to understand why calves which have had white scour die almost certainly of lung disease; recovery from the intertarsal infection does not prevent the already formed pulmonary lesion to continue its progressive development.

II.—Most ordinarily white scour is fatal; but death occurs more or less rapidly.

Sometimes the calf dies the very day of its birth, without showing the ordinary signs of the disease; it seems as if the diarrhœa has had no time to appear.‡

* These pulmonary lesions are indeed promoted by a polymorphous bacillus which takes the *Gram* and which seems identical to the bacillus of ulcerous lymphangitis of horses or of the caseous broncho-pneumonia of sheep.

† This lesion resembled much the softer tubercles of chronic pulmonary phthisis; but it was easy to distinguish them because the bronchial glands were healthy and the bacilli of Koch absent from the pus.

‡ We heard of a farmer who this year has lost 14 calves, of these 6 died without the ordinary symptoms of white scour; the others succumbed the very day or the day after birth, without having had any diarrhœa.

Most often the disease lasts several days (from 3 to 6 or 8 days); it is characterized by an intense intestinal discharge; the expelled matters are always diarrhœic, white, foaming; the sick ones lose flesh rapidly; their flanks are hollow, belly retracted, back arched, eyes hollowed in their orbits, coats dull and staring; they make violent expulsive efforts and groan pitifully while making them; the nose is hot and dry; there is little discharge of mucus from the nose; the temperature is elevated, but towards the end falls back to normal and the animals remain lying on the bed or on their fæces, unable to rise or even to stand up.

Finally, *at other times*, not so commonly, however, the symptoms are less severe and recovery takes place more or less rapidly; but, as we have said before, this recovery is only in appearance, as most of the calves die several weeks later with the pulmonary form of the disease.

Sometimes, *also*, other symptoms less frequent are observed, and yet they have a no less real importance.

It is not rare to see, in cases with rapid march, the diarrhœa mixed with blood in various quantities.

In slow forms it is not rare to observe acute, multiple and very painful arthritis appear, which prevents the animal from resting on the lame leg. When arthritis exists on several legs together, the animal cannot stand up; he looks as if paralyzed.

The *lesions* found at the autopsy vary according to the march of the disease. There is, however, one which is never missing; it is that of the umbilicus and of the umbilical blood vessels. In *all* the calves affected with white scour that we have seen we have found an umbilicus, very large, with indurated walls, containing a clot somewhat hard, at times soft and purulent; in all, also, we have observed bloody extravasations, sometimes very extensive, along the umbilical vessels and the urachus, extending sometimes to the posterior third of the bladder.

In *rapidly progressing cases* lesions of true hæmorrhagic septicæmia are found; all the organs are congested to excess;

their surface is covered with petechia, ecchymosis or subserous bloody infiltrations; the capillary network of the peritoneum, of the pleura and pericardium are very much injected; the omentum is particularly so. The intestine is highly congested, specially at the floating colon; the mucous membrane is thick, engorged with blood; Peyer's patches are thick, projecting and transformed into a kind of bloody substance, or again ulcerated, as in anthrax fever; their contents are mixed with large quantities of blood.

The mucous membrane of the abomasum is also much altered, but to a smaller extent. It is covered with interstitial hæmorrhages, especially prominent on the free border of the folds.

The mesenteric glands, especially those of the colon, are enormous, filled with red serosity, or sometimes with blood.

The mucous membrane of the bladder is often covered with petechias; the urine is clear and limpid, but always very albuminous. (In one case where it was analyzed it contained more than 4 grammes of albumen for one litre; a curious fact is that it contained also 4 grammes of sugar.)

The lungs were engorged with blood like the other visceræ; at times they were evidently œdematous, but generally the tissue was supple, elastic, permeable, and without apparent lesion.

In the *subacute forms* the lesions are much less serious.

The intestinal mucous membrane is congested to a less degree; at times there is submucous œdema. The mucous membrane of the abomasum is often dotted with brown-reddish patches, marks of capillary hæmorrhages, which take place at the beginning of the disease; the mesenteric glands are enlarged, engorged with serosity, but not hæmorrhagic.

The liver is large, with a yellowish tint on sections; the spleen is little changed; the urine always albuminous.

The lungs are rarely entirely healthy; most often they present here and there little diffused centres of catarrhal pneumonia, nodular broncho-pneumonia or only of atelectasia; those lesions are so much more constant, extensive, and dense that

the animals have resisted longer; they represent then the transition between the simple atelectasia of the beginning and the suppurative lesion of lung disease.

Articular lesions, when they exist, are very interesting; all the periarticular tissues are infiltrated with yellowish and somewhat gelatinous serosity; the synovial serous membrane is covered with very rich vascular arborisations, which seem to extend on the borders of the cartilages of the articular surfaces; the *culs-de-sac* of the synovials are distended by a great quantity of thick and limpid synovia, strongly yellow or reddish in color, and in which more or less dense and abundant clots of fibrinous exudates are floating. When the lesion is older, instead of synovia there are thick, dense, and firm fibrinous exudates, which fill the *culs-de-sac* of the serous membrane and are infiltrated between the articular surfaces. In these cases the lesion resembles exactly those of the peripneumonic arthritis of suckling calves.

III.—The bacteriological study of the first cases that I observed had given me little encouraging results. Direct examination had shown nothing positive nor characteristic. All the cultures, liquid or solid, had given only abundance of very variable microbes, whether they were done with blood from the heart, an umbilical clot, the pulp of the liver, spleen or kidneys or of the lymphatic glands; the microbian collection of white scour appeared as very rich, too much so, indeed, to draw a useful indication. It is then that besides the coli bacillus, I found para-coli, para-typhic, white and aureus staphylococcus, streptococcus, streptotheric, and fluorescent bacillus and a pneumo bacillus, liquifying gelatine, very near relation to that of Arloing. Among all those suspects, which was the guilty one? The inoculation of any of those that I had succeeded in isolating remains without results.

I was somewhat discouraged with the negative results of those researches, when Mr. Steel brought me the femoro-tibio-patellar joint of a calf killed the day before, on account of a slow form of white scour.

It was a typical specimen of those cases of fibrinous arthritis which I mentioned above. The bacteriological examination showed, among numerous ordinary microbes, such as staphylococci, streptococci, coli bacilli or para-coli, a very small immobile bacteria, coloring with difficulty, not taking the germs, not coagulating milk, not growing on potatoes, not producing indol, in one word, belonging to the group of microbes known as pasteurellas, among which so many are highly pathogenous.

Cultures made on various media confirmed my previous experience and allowed me to isolate a typical "pasteurella," whose extreme virulency was proved to me by inoculations.

Inoculated at the dose of a few drops in the peritoneum of a guinea-pig or in the veins of a rabbit, this microbe killed in a few hours, from 6 to 18. At the post-mortem, severe lesions of hæmorrhagic septicæmia were found resembling very much those of the very acute form of white scour; the microbe exists in abundance in the blood and in all the visceræ; and, curious fact, recalling what is observed in white scour, if the autopsy is not made immediately, the blood and all the tissues are invaded by various microbes, coming from the intestines or from the lungs and the cultures obtained from them resemble entirely that of white scour; they are exceedingly rich in microbes of all kinds, among which it becomes difficult to find again the inoculated pasteurella.

This point being established, the question was to know if this pasteurella was surely the agent of white scour, or if it was not, like the others, a microbe from the intestine and able only to promote the articular complication.

What one is already acquainted with can be found again easily; I took up again the study of the products taken from the calves previously destroyed, and I was fortunate enough to find again, in the middle of all the microbes already seen, the same pasteurella—equally pathogenous to the guinea-pig and to the rabbit—in the blood of the heart and in the umbilical clot of three out of the five calves killed before. I have since made the post-mortem of nine calves suffering with white scour.

In seven of those calves, I found again the same pasteurella.

In three cases, with very acute evolution, this microbe existed almost all alone in the blood of the heart, in that of the spleen; the liver, the lymphatic glands and the umbilical clot contained besides many other microbes; in a fourth case, it was this exudate of a very recent arthritis alone and without any other microbe; in the three other cases, where the disease has proceeded slowly, I had to multiply the cultures and the inoculations to isolate it from the crowd of other microbes which had invaded the blood and the tissues.

The presence of a virulent pasteurella in the tissues of calves affected with white scour was not then an exceptional fact, limited to articular complications; it may be said that it is the rule.

Does it follow necessarily that this pasteurella is the cause of white scour? A doubt is allowed by its absence in a small number of cases and the presence of other microbes in most of the cases. It was, however, probable that this bacteria is certainly the causal agent of the disease; because it exists alone in cases whose march is very rapid, and, again, because it is known, by the minute previous study of other bacteria of the same group, specially since the works of my student, Lignière, that pasteurellas have that power to reduce to nothing the natural defenses of organisms, to promote its rapid invasion by ordinary microbes which are so numerous in the intestines or in the bronchii and which are ordinarily harmless, and finally to disappear quickly when the sick are sometimes resistant to those multiple infections.

However, to remove all doubt, it was necessary to produce white scour in a healthy calf, with the inoculation of a pure culture of this pasteurella.

This I succeeded in doing in the following experiment:

April 16, we received at the laboratory two calves: one born the day before, on a farm exempt from white scour. The other, four weeks old, from a farm where the disease existed; he has been sick, but is considered as recovered, although delicate

and small; he has a good coat, he is gay, and his glance is clear.

We designate the first by the letter A and the second by B.

At 11:15 A is inoculated in the jugular with three cubic centimetres of a pure culture of pasteurella, found in the arthritis, received April 7.

At 1 o'clock B (arrived a little later) is inoculated with 10 cc. of the same culture.

During the afternoon of April 16 nothing well marked was observed; the temperature of both calves goes up a little, specially in B, which seems dull and breathes short; but altogether the two animals seem to support the inoculation well.

The 17th, at 8 A. M., the condition is changed. B has completely recovered of its ill feelings; he is gay, and drinks with relish the milk offered to him; its temperature is normal (38°8).

On the contrary, A seems very sick. It is stretched on its bed, in a mass of diarrhœic matters, yellowish and fœtid in odor; eye is hollow; flank corded; abdomen retracted; stands with difficulty when raised; takes but a few mouthfuls of tepid milk; its temperature is below normal (34°6).

At 1 o'clock the condition of it is markedly worse; he lies flat on the bed, scarcely breathing; at every instant he has spasms, with pitiful groans, followed by the expulsion of a small quantity of liquid, whitish, foaming matters; we try to make him stand, but he falls back on the bed.

At 5 o'clock he is dying; the diarrhœic discharges are mixed with blood; respiration is stertorous; temperature, 33°. At 5:45 P. M., he is dead.

Immediate Post-mortem.—Extensive congestion of all the serous membranes (specially the omentum) and of all the visceræ, liver, spleen, kidneys, thymus, lungs. Slight effusion, clear and yellowish, in the peritoneum, pleura and pericardium. Ecchymosis or subserous petechia over the surface of the spleen, kidneys and heart, in and out.

The mucous membrane of the abomasum is the seat of a

diffused congestion with petechia here and there, and specially on the summit of the folds.

The small intestine contains a foaming liquid, white-yellowish in color; its mucous is but little altered in appearance. The cæcum is in the same condition.

On the contrary, the floating colon is much altered; its contents are mixed with great quantity of blood; its mucous membrane is thick, easily torn; Peyer's patches are prominent, ulcerated or transformed into a kind of reddish pulp, sputtering under pressure; the lesion, which extends all the length of the colon, is specially severe at its insertion on the cæcum.

The lymphatic glands are everywhere hypertrophied, infiltrated with reddish serosity, with small interstitial hæmorrhages; but this lesion is specially developed on the glands of the mezzocolon.

The urine is yellow, clear and very albuminous.

The lungs are very much congested; the third and fourth lobes of the right lung are positively œdematous, and on their surface the thick and reddish pleura is rough, and as if its epithelium was removed.

An important fact to notice is that the umbilicus, the umbilical vein, the urachus and the hypogastric veins are entirely *normal.* It is thus certain that the calf was perfectly free from the disease, even free from the germ.

The bacteriological study of the various diseases of this calf has given interesting results.

The blood of the heart and of the spleen, the serosity of the pleura and that of the pericardium gave absolutely pure cultures of the inoculated pasteurella.

The cultures with pulp of the liver gave, with the colonies of pasteurella, quite a number of others of coli bacilli or of paracoli.

The pulp of the mesenteric glands gave a number of various colonies, at least equal to those of the pasteurella.

Although the disease had progressed extremely fast, and although post-mortem had been made immediately after death,

still the digestive glands were invaded by the common microbes that came from the intestine.

This experiment has then allowed us to reproduce perfectly the natural disease, with its most rapid form, and with lesions identical to those that are found in the post-mortem of calves that died the day or the one after their birth.

It shows besides, with evidence, the pathogeny of those secondary microbian infections, which are the rule in white scour as in other pasteurellosis and will in the slow form of the disease make the research of the original microbe so difficult.*

The calf B, on the contrary, continued to be well. Yesterday, 20th of April, he was gay, strong and drank his milk with relish. His case is very interesting. It shows that a first attack, followed by recovery, gives a good immunity, at least temporary; it shows the possibility (theoretical at least) of vaccinating calves against white scour; but *practically*, vaccination would be difficult, the march of the disease being so quick that it often kills calves the day after their birth or the next.

The solution of this problem must be had elsewhere.

This double experiment confirms in a very happy way the bacteriological study of the products taken at the post-mortem of the sick calves; it throws a strong light on the pathogeny of the disease.

Whatever may be the door of entrance of the specific microbe—and I am convinced that, in the majority of cases, it enters by way of the wound which results from the rupture of the umbilical cord—this microbe proliferates in the organisms and gives rise to a general affection which kills a calf sometimes in less than 24 hours. It is a pure pasteurellosis, with septicæmic form.

If the sick resists for several days—as it is the rule—the organism, deprived of the means of defense by the paralyzing action of the toxins of the pasteurella, becomes the prey of numerous secondary infections, proceeding from the intestines

* The same experiment, made since on calves born at my laboratory in Alfort, where white scour has never existed, was followed by identical results.

and from the lung; hence the various manifestations of white scour, with their more or less rapid development.

Finally, in the rare cases where the sick resists the intestinal infection recovers from white scour, the pulmonary infection continues its slow progress and ends at last by the formation of the massive lesions which characterize the ordinary form of lung disease.

IV.—The *nature* of this disease being well established, it remains to know how the infection takes place.

The principal symptoms being the intestinal discharge, one is likely to believe that the specific microbe is introduced in the organism with the food of the new born calf.

A much spread opinion is that the creation of numerous creameries in Ireland has contributed in great part to the propagation of the disease, because the milk given to the calves is deprived of one of its most important nutritive elements.

This opinion does not stand. Indeed, for one point, the disease existed in Ireland before the creation of the creameries.

And, again, our inquiry has taught us that, in none of the infected farms, no uncreamed milk is given to calves imme diately after birth. They receive pure milk during a variable time: one month, fifteen days, eight days to the minimum; but white scour appears always during the first days following birth, that is before the calf receives any uncreamed milk.

Creameries have then nothing to do with the apparition of the disease.

Yet, it is not unreasonable to think that pure milk given to new-born animals might serve as a vehicle for the agent of infection; to this point of view I have studied: 1. Milk just as it came out of the udder of a cow whose calf had just died with white scour. 2. Milk coming from an infected barn and gathered with special care.

The bacteriological and experimental study that I made of these two samples gave negative results concerning the presence of pathogenous pasteurella.

It is certain this study is insufficient to conclude that milk,

drawn from an udder without care in an infected stable, is never soiled by the dust containing the germ of the disease; but, *besides*, the facts previously established during the minute study of the other pathogenous pasteurellas have established that infection occurs very difficultly through the digestive tracts, and, *again*, we have good reasons to believe that the original infection from which white scour proceeds takes place in an entirely different way.

Indeed, the constant presence of the lesions of the umbilicus and of the umbilical blood-vessels shows that, *most often*, if not always, infection is of *umbilical origin.*

But at what moment does it take place?

Three suppositions are admissible: either the infection is of uterine origin, or again the cord becomes infected at the time of delivery, during the passage through the vagina, whose mucous membrane is always soiled with various microbes; or, finally, the infection is realized after the delivery, when the calf drops on the bedding and when the ruptured cord soaks in the fæcal matter or dirt of the stable.

This intra-uterine infection does not seem to be admissible, although some farmers say that the delivery of calves that will have white scour is most often abnormal. One must guard against those remarks made too late. If the fact was true, it is certain that a greater number of abortions would be registered, as the fœtus would offer a lesser resistance to the pasteurella infection than the new-born animal, which dies sometimes inside of 24 hours.

Our inquiry has demonstrated that everywhere abortion has not taken place or has affected only a very small number of cows.

I much better believe that infection takes place after delivery.

We have witnessed in a well-kept farm a case of labor in a cow. She was in an ordinary barn; nothing had been prepared to receive the new-born. The calf had dropped on a bedding soiled with fæces; he only fell back a little, and there during

15 or 20 minutes, we watching him making his efforts to get up, falling back here and there to the right and to the left or on his belly, dragging the stump of his cord on the ground, in the urine, or even on the fæcal matters. It was only after the mother had well licked her little one, well covered with salt, that the cord was ligated. I am not sure that the umbilicus was cleaned.

I repeat it, this I saw in one of the best-kept farms that we have visited, the farmer being certainly a very intelligent man.

It would be astonishing if, in such conditions, the calf could escape infection.

The squeezing and rubbings to which the cord may be exposed while the fœtus passes through the always soiled vagina may contribute in a certain measure to umbilical infection.

The conditions of the infection being known—and I firmly believe that they are such as I have described—it is possible to foresee the rules of an efficacious prophylaxy.

They could be presented in a notice distributed to farmers in the regions where the disease exists:

"White scour is ordinarily the result of an umbilical infection which takes place at the time of delivery, by the way of the wound made by the rupture of the cord.

"Farmers can protect their stock by the following:

"1. Cows ready to calve shall be provided with dry and clean bedding until after the birth of the calf.

"2. As soon as labor will set in, the vulva, anus and perineum shall be cleaned with tepid solution of lysol in rain water; 20 grammes of lysol for each litre of water. The vagina should be also cleaned by injecting with a large syringe a great quantity of the same tepid solution.

"3. As much as possible the calf shall be received on a clean cloth or at least upon a thick fresh bedding not soiled by urine or fæces.

"4. The cord shall be tied immediately after birth with a ligature kept in a lysol solution, and the cord amputated below the ligature.

"5. The stump of the cord and the umbilicus shall be washed with the following solution:

Rain water - - - - - -	1 litre.
Crystals of iodine - - -	2 grammes.
Iodide of potassium - - -	4 "

"6. The disinfection of the umbilicus and of the cord shall be completed by being coated with

Methylic alcohol - - - - -	1 litre.
Crystals of iodine - - -	2 grammes.

"7. The operation will be closed, after the alcohol has evaporated, by coating the cord and umbilicus with a thick layer of iodide collodion (1 per cent.) applied with a brush. Once the collodion is dried, the calf may be left to the care of its mother."

Those measures are very simple; they only demand care on the part of the interested. If they are closely followed, I have the conviction that they will be sufficient to protect calves from white scour.*

It is certain that the scientific study of the disease is far from being complete. My intention is to continue it in my laboratory at Alfort, with the material that I have collected at Limerick.

I shall have the honor to make known the results later on.

INTUSSUSCEPTION OF THE BOWEL IN THE OX.

By Dr. Chas. Schmitt, Dodgeville, Wis.

The subject which I have chosen is one that receives but little attention; first, because it is one of the diseases that is not recognized at its early stages; secondly, very little is known about its causes, although its nature and its conditions are quite

* Since this communication I have received from Professor Mettam a letter informing me that this treatment is applied in many farms of the county of Munster. It is yet too early to appreciate the results; but M. Mettam says that in a farm where, out of 21 calves born before the application of the treatment, 12 had died with white scour, none of those born since have succumbed.

well understood. The supposition is that its causes are two-fold, and for this reason opinions differ.

The subject which I bring before you, endeavoring to get some information and enlightenment, is intussusception or invagination of the bowel of the ox. Invagination is the slipping of a portion of the intestine into the cavity of that immediately posterior to it; in consequence of this the natural functions of the intestine are interrupted by a kind of knot, consisting of three successive portions of bowel, the immediate effect of which is obstruction of the passage of the intestinal contents and to the return of blood from the impressing portions of intestine involved, along with some portion of the mesentery.

Both the small and large intestine are subject to it. Instances have occurred, both in horses and cattle, of recovery after sloughing of the invaginated portions. Several writers, such as Siebert's article in *Thierarztliche Wochenschrift* in 1861, relates of several cases. Meyer's Annual Report, 1864, describes several cases. Williams' "Principles and Practice of Veterinary Medicine" has a very short article on this subject. In his opinion cases recover without any treatment far better than with treatment. His own treatment consists of opiates. I consider it out of the race and entirely unqualified to treat cattle whatsoever, and for that reason we may ignore his work.

Möller's "Surgery" describes the disease as a most frequent form of fatal colic, and describes the symptoms as follows: The disease begins with a sudden attack of colic, which may last twelve hours, and is followed by subsidence of pain. Appetite is wanting, rumination ceases, discharge of blood-stained mucus sets in or obstinate stoppage of the bowel occurs. Peristalsis is incomplete, the pulse becomes frequent and small, but the temperature seldom rises. On examination per rectum the invaginated spot may sometimes be felt as a cord-like painful swelling. Slight colicky symptoms, straining to pass fæces and discharge of small quantities of mucus or blood continually recur.

Dr. Merton says the animals show a desire to lie on the back. Friedburger and Fröhner's "Pathology and Therapeutics"

describes the symptoms as follows: "Intestinal invagination is the most frequent cause of colic in oxen, and is more common in this animal than in the horse. It is ascribed to colds, and violent efforts on ground which has an irregular surface, which causes discharge of the peristaltic movements."

Invagination is sometimes latent during some hours following its production. The complications which arise may develop slowly. Ordinarily its symptoms are quite expressive; the animals are suddenly attacked by more or less violent pains without any previous indigestion. These attacks persist from six to twelve hours, then disappear abruptly and entirely as if cured; but the depression and broken-down condition as well as cessation of rumination, diarrhœa, or the expulsion of small quantities of dried fæcal matter, indicate the persistence of the trouble. The constipation becomes obstinate and does not yield to any purgative. Under the action of violent expulsive efforts on the part of the animal thick mucus, often mixed with dark blood, escapes through the anus. The peristaltic movements are completely suspended, and the abdomen becomes greatly distended by the accumulation in the intestines of gases which are formed there in abundance. On palpation we may detect an intense sensitiveness of certain regions. The pulse is small and accelerated, but the temperature is hardly increased; sometimes it is even lower than normal. The body is cold, the patients are apathetic and in a comatose condition. We can recognize the invagination by rectal exploration. The hand perceives a cylindrical enlargement more or less extended along the intestine.

The same author perceives that invagination occurs mostly in the small intestine, although Degivé's experience is that both the small intestine and the floating colon are the seats of the trouble. I must agree with Degivé's experience. I have observed it both in the small intestine and floating colon. The majority of the cases are of the small intestine.

The symptoms that I recognized are, first, colicky pains; the animal stamps with his feet, lies down and gets up, switches with his tail and shakes his head, continuing so for fifteen or

twenty minutes. After that these attacks disappear abruptly and entirely as if cured, but after thirty minutes or one hour they recur and so continue from six to twelve hours; after that the animal lies down quietly, occasionally gets up and lies down again. The pulse is accelerated, temperature normal, the muzzle is moist, ears and horns are slightly cold, and the abdomen is distended with its contents. The peristaltic movements in the bowel are suspended in the early stages. These symptoms are very often recognized by veterinarians as simple colic or impaction, and treatment is given for same without further or closer observation, and for this reason—there are so few reports of cases in literature.

On palpation we detect an intense sensitiveness of this region, and the animal shows signs of pain on percussion. We can also recognize invagination by rectal examination as far as the floating colon, but when it comes to the small intestine it is somewhat difficult.

The animal in the course of the disease becomes comatose and seldom struggles. The appetite is entirely suspended, but during the progress of the disease the animal will drink water frequently. The mucous membrane becomes greatly congested and the eye gives an expression of anxiety, very often a staring look as if the animal was frightened. In the latter stages cold chills are observed, the lower limbs become cold, seemingly the circulation somewhat tardy. Considering all these symptoms veterinarians should not fail in recognizing these conditions, although strangulation and invagination resemble each other very closely and can hardly be separated except by incision through the abdomen.

Siebert's treatment for invagination is by attempting to reduce invagination, either by operation or generating carbonic acid gas in the body. He relies greatly on the latter treatment. After giving aloes with sulphate of soda in linseed tea, he injected twenty-five ounces of bicarbonate of soda suspended in water into the rectum, which had been previously emptied as far as possible with the hand and tobacco clysters. Diluted hy-

drochloric acid was then passed into the anus and closed with the hand. In a short time the right and later the left side became greatly distended, and the animal strained so much that it was difficult to keep the anus closed. After a time the hand was removed and large quantities of carbonic acid gas and fæces escaped—and the animal recovered, having thus cured a cow of invagination of five days' standing. But this treatment is scarcely recommended by the fact that he afterward found the cast-off portion of the bowel in the dung. If invagination had really existed, recovery was due less to the treatment than to the *medicatrix natura.* The method may, however, be tried when operation is out of the question and other means are effectual.

Dr. Meyer has operated on several cases. His great contention was after cutting through the bowel, or mesentery, to stop the ingesta, and after a section of the parts great difficulty was observed in bringing both ends together. Although, after succeeding in stitching the bowel together, and removing the bowel-clamps, great difficulty was caused by the continued passage of the ingesta through this section, and he was somewhat embarrassed by his results.

Degivé's experience is somewhat singular. He prefers to open the abdomen and replace the invaginated part if possible, and on failing to do so leaves the animal to its fate.

Dr. Taccoen operated on two cases, from one of which he removed ten inches of bowel, but had no bad consequences. Thirty-five days later the external wound was healed, and on slaughter the incision in the bowel was found to be completely cicatrized. In the second case an incurable *anus præternaturalis* formed, but did not impair the animal's health.

Dr. Riedinger treated during 1890 ten cases of invagination of the bowel in oxen. Seven animals had to be slaughtered on account of the operation being done too late. On the other three laparotomy was carried out and the invagination reduced. The portion of bowel was cleansed with one per cent. of sublimate solution, replaced and the bowel closed with button sutures.

After-treatment consists in giving purgatives, five to six hours after the operation; action of the bowels occurred. After that in one of the animals peritonitis occurred five days after the operation, rendering slaughter necessary. The other two recovered in fourteen days. He seems to be the most successful up to that time.

Being unable to find any literature or reports on this disease in American literature, must resort to giving my own experience.

October 18, 1900, I was called to see a graded short-horn cow, nine years old, being fattened for slaughter for the previous six weeks. After verbal examination slight colicky pains were exhibited, pulse somewhat accelerated, temperature normal, ears and horns warm, muzzle moist, although the animal was quite uneasy, stamping with its feet, striking its body with its hind leg, switching its tail, shaking its head, moving back and forward, and lying down. Appetite was suspended, although the animal drank a bucket of water in my presence. I came to the conclusion that it was merely colic caused by an abundance of ice water the day previous. The owner informed me that they had given her some salt and she drank a lot of water. Giving treatment for the same, left the animal in the care of the owner. Was informed the next day by telephone that the animal had several attacks of these colicky pains during the day. After examination found that the ears and horns were cold, muzzle dry, pulse very much accelerated, temperature normal, mucous membrane congested, a staring look, and cold chills. The abdomen was somewhat distended by its contents and gases. On palpation of the left flank found great sensitiveness; rectal exploration revealed an oblong swelling, hard and sensitive. Came to the conclusion that it must be invagination or strangulation, or both. Advising the owner of my opinion and the necessity of an operation, he somewhat hesitated, the animal being quite fat and a large abdominal incision would prevent the animal from going to market for a long time. But after impressing on him that this was the only

means by which the animal's life could be saved, and having faith in me from previous occasions, consented to have the operation performed.

After preparing the animal for the operation as far as I could, although the abdomen was greatly distended by its contents and fæces, stood the animal with her right side against the wall, tied her head firmly and placed a plank under her abdomen so as to prevent her from lying down during the operation and gave her four grains of morphine hypodermically, and locally eight per cent. solution of cocaine over the parts to be operated upon. After clipping the hair and washing the parts with soap and water, and bathing it with a sublimate solution, one to a thousand, made a longitudinal incision eight inches long, and cutting through the bowel placed an aseptic towel on the lower portion of the wound; inserted my hand and found the invagination in the anterior portion of the floating colon. Bringing the parts on the outside of the abdomen, placing bowel-clamps back of the diseased portion, leaving room for dissection. Resected the diseased portion carefully and antiseptically, laying special stress that no escape of the ingesta should take place, by placing several aseptic towels in the abdomen, from previous occasions being convinced that something would be necessary to hold the bowel in its normal shape during the stitching or bringing of the parts together, to prevent the escape of the ingesta afterwards through the wound.

No doubt you have observed or heard about Murphy's Button, the great surgeon of Chicago. This button is made of glass or aluminum, and nurses have told me that it could be used numbers of times as long as it was made aseptic.

Having seen one of these buttons last fall in Chicago, it struck me forcibly that something of this nature would be of great help in our profession. Realizing that it would be a hard matter to get the exact size required in our profession, and the great expense to get them made, came to the conclusion to make one myself, out of celluloid sheets about four inches long, the shape of an hour-glass. You can see readily what a great improvement this hour-glass shaped button would be in these complicated operations.

After sterilizing this button thoroughly, inserted both ends in the bowel, and brought ends together in the centre of this button, placing underneath boracic acid and iodoform, one to twelve, inside and between the bowel and the button; sewed the bowel together with Lembert's bowel sutures. After sponging and dressing it with boracic acid and iodoform externally, replaced the bowel.

The ingesta began to move through the button, and fifteen minutes after the operation the animal passed large quantities of mucus, blood, and ingesta. Removing the aseptic towels, stitching up the abdominal wound and dressing the outer surface, gave the animal internal stimulants. The animal rallied very quickly, and in two hours drank a bucket of warm water. Diet was regulated according to the necessity of the operation, and the animal fully recovered in six weeks.

I never heard from the button, in fact I doubt whether it was digested or absorbed, or whether the owner failed to find it, but nevertheless the animal fully recovered, and is alive to-day, and will go to market in a short time.

Here is a sample of this button. This is made out of tin, but it should be made out of glass, celluloid, or gutta-percha. This case may be exceptional, but I can see no reason why it is not practical. I would be pleased if any of you have some new ideas to bring out on this question. American literature is very scarce and we must bring it out ourselves. I leave the subject for your consideration; would be pleased to answer any question that may be asked, if it is possible.

BENIGN TUMORS AND CYSTS.

By H. F. Palmer, B. S., D. V. S., Veterinarian to Parke, Davis & Co., Detroit, Mich.

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A tumor is any circumscribed enlargement or swelling or any disease in which portions of the body depart from their normal form by an unnatural increase in size. It is also more restricted and is applied only to those new formations of obscure origin which, after appearance, remain either as permanent or progressive productions.

Tumors are of two kinds—benign and malignant. A benign or non-malignant tumor is one which, if allowed to remain, is capable of doing injury only by its bulk and pressure, or which, if removed, exhibits no tendency to return.

A malignant tumor is one which proves destructive to the tissue in which it is located, which tends to contaminate adjoining glands or to be disseminated through the blood vessels, including changes unfavorable to the proper nutrition of the body.

After removal they manifest a tendency to recur either at the original seat of the disease or in another part of the body, and are capable eventually of destroying life. The number of malignant as compared to the number of benign tumors is fortunately small.

The benign tumors do not materially differ from the nature of the tissue in which they fix their habitation. A lipoma, which is a neoplasm of fat, is in most respects identical with the surrounding adipose tissue, and a fibroma is only a localized hypertrophy of the connective tissue in the midst of which it is lodged. Malignant tumors, on the contrary, embody in their structure histological conditions altogether unlike the perfected tissue in which they grow.

The following considerations will help us to differentiate the two kinds of tumors. Malignant tumors are solitary and recur after extirpation. Benign tumors have not the glandular infection and do not infiltrate into other tissues. Benign tumors

develop slowly and do not adhere to the skin and adjoining tissues. Both kinds of tumors usually pursue a painless growth for a time, and the benign seldom causes pain unless from its bulk interfering with natural functions. Benign tumors have a feeble blood supply and they seldom contain any juice.

Several theories have been advanced accounting for the origin of tumors. The congenital, the nervous influence, spontaneous and inflammatory theories all have their advocates. Whatever the growth may be, there are three conditions necessary for the development of a morbid growth—structural peculiarity, a specific irritant, and inflammation.

Benign tumors are classified as follows:

Fibroma or fibrous material.
Epithelioma of skin.
Osteoma of bone.
Enchondroma of cartilage.
Neuroma of nerves.
Lipoma of adipose tissue.
Adenoma of secreting glands.
Myxoma of mucous tissue.
Angioma of blood vessels.
Myoma of muscle.
Lymphoma of lymphatic tissue.

Fibroma or fibrous tumor is usually found in parts containing much fibrous tissue. It is a hard, rounded, painless tumor. Surface of tumor smooth or divided into lobes, generally movable, and contained in a wall of areolar tissue. They vary in size from that of a grain of shot to a goose egg or even larger. They are made up of fibres of yellow elastic and white fibrous tissue which run in various and apparently confused directions. The compactness of these layers of fibre give the tumor a hard or soft nature. They have few blood vessels and are usually lodged in a sac and receive their nourishment from its walls. The favorite seat of these tumors is on the inferior surface of the abdomen, and also in the uterus, especially of the bitch.

Diagnosis:

Slowness of growth, hardness of structure, and regularity of surface, absence of pain except when the tumor presses on the adjacent nerves, no tendency to become adherent to the integument, no enlarged veins over the surface.

Treatment:

When they mature, remove with a knife or ecraseur. They can often be removed by making an incision in the skin and pressing them out by hand and dressing the sac with some astringent, as copper sulphate.

Nasal polypi are a species of fibrous tumors attached by narrow pedicle. They are of soft nature, bleeding when injured, growing downwards and fill nasal cavity. The diagnostic symptoms of this are: discharge from the nostril often tinged with blood, sniffling sound in breathing, and frequently sneezing. They may grow backward and fall into isthmus fauces. Tumor may not be seen.

Treatment:

Remove by some means and wash with astringent lotion. Fibrous tumors may be due to imprisonment of pus in the deep seated inter-muscular structures. These can be removed by the knife or by caustics, the former method being preferable in large tumors.

Epithelioma includes all warts, corns, horns and papilloma. Warts consist of a thickening of the epidermis produced by accumulation of its scales with hypertrophy of the papillæ of the true skin. They are found mostly on young animals, their favorite place being the under surface of the abdomen, the genitals, lips and eyelids.

They may be removed either by excision, torsion or by caustics. Warts of large nature can be easily removed by putting a tight rubber band around the base, thus shutting off the blood supply and sloughing off the wart. To remove a wart by caustics first wash it thoroughly, and then apply any of the strong mineral acids, taking care not to let any of the acid come in contact with the surrounding skin. Usually one application suffices.

A soft papillomata or myxoma consists of products of the mucous membrane, and is located on any of the mucous membranes, but especially on those of the mouth and vagina. These can be extirpated in the same manner as the soft papillomata, provided they are situated in an accessible place.

Adenoma is an epithelioma and is a new formation or development of gland tissue. These tumors vary as the structure of the glands vary. Some are racemose and some tubular, depending on the epithelium which lines the gland. These tumors are benign in their nature and exhibit no tendency to return when thoroughly removed. Although often mistaken for carcinoma, they can be differentiated by noting that in adenoma the cells, lining the cavities of the glands, rest on a well-defined basement membrane, which is not the case in carcinoma. As the cause of adenoma is some local irritant, the remedy that suggests itself is an operation to remove that irritant.

Lipoma, or fatty tumor, consists of a quantity of normal fat cells closely packed together. They are not very well supplied with blood vessels or nerves, and hence this makes their removal easier.

They can be removed by excision, and the sac must be broken down and destroyed by the actual cautery or a caustic wash.

Neuromatous tumors are not as frequent in our patients as in the human family. Only one set of nerves give us much trouble from such attacks—this is the plantar after its division in foot lameness. These tumors are of a solid, firm consistency, composed of a fibrous stroma with numerous groups of cells scattered throughout them. They are found as rounded or oval bodies with their long diameter along the course of the nerves, movable in transverse but not in long direction. Being a part of the nerve, they cause great pain and should be excised at once.

Enchondroma, or cartilaginous tumors, consist of any or all of the three kinds of cartilage, hyaline, fibrous, and mucoid, the favorite seat of these tumors being in the region of the sternum

or upon the ribs. Their peculiar location is due perhaps to their cause, which is often from an external injury. There are two forms, one being round or oval with well-defined limits, the other having no well-defined border but resembles an infiltration into the surrounding tissue. These latter may arise from the development and growth of cartilage in an inflammatory exudate.

The diagnosis of enchondromatous tumors is not generally a matter of difficulty. Their hard, slightly compressible feeling, their knobbed or irregular surface, their painless progress and usually their connection to cartilage or bone. The treatment consists in their removal as early as possible by excision, as their location especially on the sternum may cause great inconvenience to the animal's movements.

Osteoma.—These tumors, commonly described as exostoses, are masses of bone or outgrowth from different portions of the skeleton. In structure and chemical composition they agree with either the compact or spongy tissue of normal bone. In form, they are not uniform, being sometimes lobulated, sometimes spherical, and at other times spinous or spiculated. They are of slow growth, and vary much in size. Except when the tumor attains considerable magnitude, little inconvenience is experienced by the animal, and when pain accompanies them it is due to their pressure on adjacent nerves, or its interference with the movement of tendons. Their extreme hardness and firm connection with bone are their chief characteristics. Being of slow growth, benign in their character, rarely attaining to any great magnitude, and having a tendency to become fixed, it seldom becomes necessary to remove them. If they do attain to such a size that their removal is necessary, they can be uncovered and detached with a saw. Even when they are pedunculated and a portion of their stump is left, the base shows no disposition to grow.

A *myoma* is a tumor consisting exclusively of muscular tissue. They are exceedingly rare, but may occur in two forms. One is allied in its histological structure to striated muscle, but hav-

ing very much smaller fibre cells, the other is simply a hypertrophy of muscular tissue. The former are usually found in some portion of the genito-urinary tract. The latter are associated with a preponderance of connective tissue resembling a fibroma, and hence often called fibro-myoma. These occur in the uterus, vagina, bladder, testicle, prostate, scrotum, œsophagus, stomach and intestines. The tumor is firm in consistence, being spherical or pyriform, and has a white or flesh-colored appearance when laid open. The growth of these tumors is often arrested and in some cases diminished by the use of ergot. This acts by inducing muscular contraction, and hence lessens blood supply. If the growth is of such a size that it hinders the animal or jeopardizes its life, they may be extirpated either through natural channels or through an abdominal incision.

Lymphoma may be divided into two classes—the soft and hard. In the soft, all the cells of the lymph gland are greatly increased in size and number, while in the hard kind there is a preponderance of connective tissue and a diminished number of lymphoid cells.

The diagnostic symptoms of lymphoma are that they usually occur in thriving young animals, and affect a whole chain of glands of a limited area of one side of the body. They have no tendency to suppuration or caseous change, and do not excite inflammation in surrounding tissue. A lymphoma, under any circumstances, gives just cause for apprehension, and, if constitutional contamination occurs, the case is as hopeless as carcinoma.

Treatment.—Iodine and arsenic both internally and externally and iodoform dressing. Their removal with the knife is usually unsatisfactory.

Angioma is a tumor composed of blood vessels supported by connective tissue, and is known under various names, as erectile tissue, aneurism by anastomosis, etc. These are helped and often removed by application of actual cautery or by enucleation.

CYSTS.

All cysts may be divided into two general classes—retention

cysts and neoplasmic cysts. The former consist in a distention and hypertrophy of a duct or secreting gland, the contents of which is the normal secretion more or less altered by retention. The latter are new formations which are the result of enlargement of the primitive cell or areolar interspace.

Retention cysts occur on the skin and subcutaneous cellular tissue. They are round and smooth in outline and free from pain. They are composed of sebaceous secretion, epithelial scales, oil globules, granular matter and crystals of cholesterin.

To this class belong mucous cysts, sebaceous cysts, salivary cysts, distention of bursa, effusions into sheaths of tendons and muscles.

Mucous cysts may appear anywhere on a mucous surface. They are tense globular swellings, occasioning ltttle or no pain, and are filled with viscid ropy mucous and epithelial débris.

Sebaceous cysts are quite common in the human family, especially among the females. Nearly all have recently seen specimens of these and the manner of their removal, so they need no further description here.

Salivary cysts are met with in connection with the ducts of the salivary glands. When these appear under the tongue on either side of frænum lingui, they are then called ranula.

Distention of bursa is quite common about the posterior part of the fetlock joint, and is known as wind-galls. They are soft symmetrical cysts of varying dimensions, painless and, except for their unsightly appearance, cannot be called an unsoundness.

Distention of bursa may be seen better developed and causing more inconvenience in the region of the hock. These cause lameness by their mechanical obstruction to the free movement of the joint. Among these may be noted thoroughpin, which in many cases is simply a distention of the bursa.

All retention cysts are treated by producing absorption by means of stimulating applications. If this fails, tap the cyst, remove its contents, and scrape the internal membrane or inject a stimulating fluid into the sac after the contents is removed.

Or, if in a favorable location, they may be dissected out. The latter method is probably the preferable one.

A neoplasmic cyst is filled with a fluid secreted by its lining membrane. The fluid may be thin or serous, thick or viscid. These cysts may be simple or compound. The compound often enclose teeth, hair, etc. When enclosing teeth they are called dentigerous cysts.

The simple cysts may include capped hock, knee, elbow and fetlock, which may all be considered under one head. They all are usually the result of some external injury. At first there is a mere fusion of serum underneath the skin. This terminates in a serous abscess named from its location.

Treatment may consist in the application of the following:

Hydrarg. biniodide	℥ ij
Water	℥ xij
Pot. iodide	q. s. to dissolve the mercury.

Use until soreness occurs, then withhold and apply later. If this fails, may aspirate, use seton, or else perform a radical operation.

Bronchocele, Derbyshire neck or goitre. These are cystic enlargements of the thyroid gland, the origin of which is unknown. They are said to originate from the drinking water taken into the system. It is a soft fluctuating swelling of the thyroid gland, occupying one or both sides of the larynx. Although unsightly, they never interfere with the general usefulness of the animal.

Treatment:—

℞	Iodine	℥ j
	Pot. iodide	℥ j
	Lard	℥ viij

Apply once a day until soreness is produced. If very obstinate give ℥ i of pot. iodide three times a day for eight days.

Parasitic cysts are a class of the compound neoplasmic cysts. These are cysts containing larvæ of some parasite.

Cysts containing teeth are found in the testicles and other parts of the body, but the favorite locality of these is within the

antrum, even as high up as the base of the ear. The development of these dental tumors is due to some malformation during fœtal life. The teeth continue to grow in their unnatural location, and so form immense tumors.

Simple neoplasmic cysts can be treated the same as retention cysts by applying stimulating applications or drawing off the contents and injecting stimulating medicines. The compound neoplasmic cysts have but one method of treatment and that is excision. They must be thoroughly and effectually dissected away.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

PARTURIENT PARESIS—SCHMIDT'S TREATMENT.

By W. R FRENCH, D.V.S., Great Barrington, Mass.

Case No. I.—Grade Jersey cow, 8 years old, in high condition. Calved at 5 o'clock A. M., March 13, 1900. Called to see her at 11 o'clock, March 14. She was then down and unable to rise. I emptied bladder and rectum; disinfected udder and apparatus with bichloride of hg. solution, 1-1000. Injected into udder with Schmidt's apparatus 2½ drams potass. iodide, dissolved in hot water and cooled to a temperature of 104°F. Left ex. nucis vom. fl. and ex. bellad. fl., to be given in dram doses every two hours. Directed hourly massage of udder. Saw her again at 5 o'clock P. M. She appeared worse; ocular insensibility complete; no perceptible action of stomach or intestines; head curled to side; stertorous breathing. Repeated potassium treatment as before. Emptied bladder and rectum; turned her over; continued nux and belladonna. March 15, 8 o'clock A. M., cow better; attempting to rise and paying some attention to surroundings. Gave orally 2 drams of potass. iodide. Left spts. ammo. aromat. and spts. vini rect. to be given every four hours. Cow made rapid recovery.

Case No. II.—Grade Jersey cow, nine years old, in fair condition. Called to see her 48 hours after calving. She was up, but staggered fearfully and went down before treatment could be given. Gave substantially same treatment as in case No. I, but gave only one injection of potass. iodide. Owner came to office next day saying cow seemed doing well, and thought I

might send her some treatment, which I did. She made a nice recovery in a short time.

Case No. III.—Thoroughbred Jersey cow, seven years old, large milker and in good flesh. Called to see her 36 hours after calving. Had been turned out and was taken sick on the road while being led home. Gave Schmidt's treatment at 3 o'clock P. M., the cow being down and unable to rise. Ordered hourly massage of udder and gave stimulants in small doses every two hours. At 9 o'clock P. M., while on my way to see her I met the caretaker, who told me cow was breathing her last. Found her prone on side, breathing heavily and looking far from encouraging. Gave Schmidt's treatment again, emptied bladder and rectum, and placed her in natural position. Saw her at seven o'clock A. M., she was up and eating. Man said she got up at 1 o'clock A. M., and stayed about 15 minutes. This cow was all right in 15 hours.

Case No IV.—High grade Jersey, six years old. Called to see her at 7 o'clock P. M. She calved early in the morning of the day before. This cow was up when I arrived, but went down while giving the treatment. Saw her at 2 o'clock A. M. She seemed better. Gave stimulants, but did not repeat the potass. injection. This cow was all right in a few hours. Perhaps this was not a typical case, still I have seen cows which appeared as well as she die within 24 hours under the old methods of treatment.

Case No. V.—Thoroughbred Jersey cow, eight years old, large milker and in good flesh. Called to see her 24 hours after calving. She was then up and took the treatment standing. She remained up but a short time. Gave her 2 lbs. sulph. magnesia. Left stimulants to be given every two hours. Saw her again in six hours. She was down broadside, breathing heavily. Auscultation revealed no action of stomach or intestines. Was in comatose condition; insensibility complete. Injected into udder 2½ drams of potassium iodide; emptied rectum and bladder; ordered soap and water clysters; placed her in a natural position. This cow died fourteen hours after being taken sick. The treatment had absolutely no effect upon her.

Case No. VI.—Extra large Guernsey cow, seven years old. Called to see her 48 hours after she calved. She was down and making vain attempts to rise. Eyes were staring, head very unsteady. Gave two lbs. sulph. magnesia, also Schmidt's treatment. Left ex. nucis vom. fl. and ex. calabar bean fl., each to be given in dram doses every two hours. She grew rapidly

worse, and owner had plans well matured for a funeral. When I saw her six hours after first injection, she was prone on side; could hear her breathe forty rods away; emptied bladder and rectum; injected into udder two drams potassium iodide, and rolled her up in natural position, where she breathed easier. Owner said she breathed easier than she did two hours before. Left nux and calabar bean to be given every three hours. She got up in five hours after the second injection, and made a nice recovery. In all these cases antiseptic rules were observed. Hourly massage of udder was rigidly enforced.

FRACTURES OF THE OS SUFFRAGINIS FROM SLIGHT ACCIDENTS.

By HENRY TWEEDLEY, M.R.C.V.S., Buffalo, N. Y.

The following cases may be of some interest, showing how serious an accident may happen from very slight apparent causes.

(1) A carriage horse while being slowly driven down a slight incline suddenly dropped to one side and immediately went very lame; was taken home and a few days after I visited him. After examining, I gave my opinion that fracture of the os suffraginis had occurred. As I did not care to destroy him on my own opinion, I called in the assistance of another veterinary surgeon, who confirmed my diagnosis, and as by this time he was in very bad condition, I destroyed him. Found a very severe fracture of the os suffraginis, split into three parts.

(2) A heavy draught horse going up a hill with a load, slipped and went down on his knees; recovered himself, but a second time stumbled. On recovering himself, he was very lame on off front leg. Remained lame for a long time. Kept him in the slings for several months, as the owner thought he had injured the shoulder, although I was convinced that the os suffraginis was the seat of the injury. After five months was destroyed, and a fracture of the os suffraginis was revealed.

(3) A buggy horse driven daily by his owner to and from his place of business, was brought home all right at night. Placed in his loose box as usual. Next morning was very lame on the off hind leg. We were at a loss to account for the injury, but after a few days had no difficulty in diagnosing a bad fracture of os suffraginis. As he was a great favorite, I was asked to try and make him serviceable. In about six weeks was able to go very well, but still pretty lame, and with a very

large enlargement of the pastern. Was able to work fairly well, but always a little lame. I forget what ultimately became of him.

(4) This horse, one of a team which was run into by another horse, immediately was so lame that he could not put the near fore foot to the ground. I had him sent home in the ambulance. On reaching home, thinking he might have received an injury to the shoulder, I manipulated, but was unable to find the least evidence of injury. I examined the limb carefully, and the only part where I could detect the least pain was on the os suffraginis, on pressing the front of this bone with my thumb pain was clearly evident. After three weeks treatment was in exactly the same condition with considerable enlargement of the pastern.

At the present time of writing, five weeks after the accident, he can walk very well and gives promise of doing well. There is considerable enlargement of the pastern. I may say that the pain on pressure remained clearly in evidence for three weeks after the injury.

With regard to the frequency of this fracture Stockfleth in "Thierarz-liche Chirurge," German translation, says that fracture of the os suffraginis comes second in the list of frequency. Against 65 fractures of the pelvis, came 16 of the os suffraginis and 12 of the os corona. Stockfleth in his interesting work relates quite a number of fractures of the region of the pastern, almost all of which have happened in a manner closely resembling those I have endeavored to describe. In one of his cases the pastern bone of both fore legs being fractured, and in another case the bone was fractured with no less than twenty-six larger and smaller pieces. He further states that from Hertnig's observations a special brittle quality of the bony tissue may induce fractures of this region, as Hertnig has seen the os corona fractured in all four feet of a horse.

TRAUMATIC PERICARDITIS.

By W. L. West, V. S., Belfast, Me.

January 23d, 1901, I was called to see a three-year-old cow which had always been healthy and hearty.

Symptoms.—Temperature 102°F., pulse 90, respiration 24, and not labored, anorexia complete, bowels somewhat constipated, head hangs low, lungs normal, but with the phonendoscope can hear a thrilling sound over the heart area.

Diagnosis was provisional; told owner the cow had indigestion, but had more heart disturbance than was customary.

Treatment.—Gave magnesium sulphate 500.; aqua, litre, and left fluid extracts of nux vomica and gentian to be given every three hours, and told owner I would call next day.

January 24. Owner sent me word not to call as cow was all right.

Jan. 28. Was called to see same cow and found her refusing both food and water; temperature 105° F., pulse 132, heart pounding and thrilling, eyes unnaturally bright, jugulars tense with blood but no jugular pulse; left lung tympanitic on percussion, submaxillary space œdematous, anterior limbs projected alternately.

Revised Diagnosis.—Traumatic pericarditis. Prognosis unfavorable and advised destruction and use of meat, but the owner was skeptical as to correctness of diagnosis and wished to continue treatment, hence gave fluid extract of digitalis 4., *ter in die*, more expectant than with any hope of ultimate benefit.

Jan. 29. No apparent change; treatment continued.

Jan. 30. Owner decided to destroy the cow, and post-mortem was performed immediately.

Post-mortem.—Œdema of the subcutaneous tissue on both sides of the thorax with a yellow gelatinous semi-fluid substance in abundance. Reticulum adherent to the tendinous portion of the diaphragm and pierced with four pieces of hay wire about eight centimeters long, one of which had completely pierced the wall of the heart and protruded into the left ventricle.

On the end of the wire which protruded into the heart was a small ante-mortem clot. Pericardium was adherent over nearly the whole heart and when pulled apart seemed dovetailed or something like a fœtal and maternal cotyledon.

The other organs were normal.

HYPO-SULPH. SODA POISONING. *

By Dr. J. G. Parstow, Shenandoah, Iowa.

On March 19th I was called to Red Oak, Iowa, to investigate a trouble existing in a large barn of feeding horses. On my arrival I learned two had already died and was shown four or five that were quite sick. The symptoms, as the owner and caretaker had noticed, were loss of appetite, whisking of tail, followed by light colicky pains and profuse diarrhœa, the colicky pains gradually increasing in severity until extreme agony was evinced in those two that had died.

* Read before the Iowa and Nebraska Veterinary Medical Association, at Omaha, Neb, Nov. 29, 1900.

I examined those in the barn and found the hearts' action and respiration very little interfered with. Temp. from 101 to 102. Recognizing it as a dietetic trouble, I proceeded to examine the diet; the grains, hay and water to all appearance were number one; I was then shown a keg of soda hypo-sulphite and was told that each horse was receiving about a dessert spoonful each day. This did not strike me at first as of any importance, but I was inquisitive enough to ask if those horses would eat that soda in the coarse crystal form in their feed; then the facts were shown that the soda for the entire stable was placed in a tank and water drawn on to it, when dissolved the horses were let out one at a time to water; some would refuse to drink while others drank heartily.

My suspicions were aroused and I set about weighing the soda, and measuring the water. This done, the result was that each gallon of water was found to contain approximately 18½ dr. of soda. This was offered after each morning's feed. Now, figuring on from 4 to 6 gallons of water to those horses that did drink heartily, they were receiving from 4½ to 7 ounces of the soda. I could not say that that was sufficient to kill a good healthy horse, so I resorted to post-mortem on one that had died on the night previous. The deviations from normal as I noticed were as follows:

Large intestines, totally devoid of blood, dark drab or slate color, the wall rather thicker than normal, caused from submucous effusion. This effusion was like a jelly in consistency, yellowish in color, tinged with a dark drab.

Stomach.—Tissues normal, but contents heavily coated with black tarry substance where it came in contact with the walls of the organ.

Spleen.—Totally devoid of blood and on section it presented a beautiful dark cherry red, stroma tough with withered feeling.

Kidneys.—Mottled with dark blue spots. Over each spot the capsule was markedly indentated. Underneath each spot a congested streak passed down through the cortex.

Bladder.—Empty, and heavily coated on lining with a milky like secretion.

Left Lung.—Congested, but as animal was lying on that side some time before dying I believe it was caused from some of a drench.

Blood.—Was a beautiful dark cherry color, and feebly coaguable.

This completed the post-mortem, and I announced my findings to be that of a hypo-sulphite soda poisoning.

Treatment.—Remove the cause. To the worst cases oleo lini 1 pt. to each was given, followed by light stimulants, with orders for a light laxative diet. No further loss was experienced. One or two of the worst cases convalesced slowly.

CÆSAREAN SECTION IN COW.*

By Dr. J. G. Parstow, Shenandoah, Iowa.

On June the 11th last, I received a call from Mr. Peck, a near-by farmer to our town, who said he had a two-year-old heifer that had been trying for some time to calve, and that he was now satisfied she needed my assistance. I prepared for the occasion, and drove over. There I found a medium sized grade heifer, in fairly good flesh and presenting a healthy appearance. She was lying in a shed unable to rise, and very poor sanitary conditions surrounding her, none better indoors to be had. I learned she had been laboring some fifteen hours, he offering such assistance as he was able to by placing ropes on the two feet then presented.

I made an examination and found those to be the hind feet. The pelvic cavity was small, the calf large, plump, and an extra well-developed one. To make a normal presentation was beyond my power. To remove it through the natural channel was impossible without section, and section did not appear practicable in this case. So I suggested removing by the side, though giving little hopes of favorable results. Consent was freely given, so I prepared to operate.

The patient was secured by stretching. The right side sterilized. Chloroform was administered with instructions to assistant how to follow the same.

I then made opening into abdominal cavity, commencing a little below and about midway between the external angle of ilium and border of last rib, running downward and slightly forward for sixteen inches. The uterus was then punctured and the wall divided by force or torn across the superior surface. The fœtus and membranes were then removed, and the peritoneal coat of the uterus brought together by means of an uninterrupted silk suture. The peritoneum closing the abdominal cavity received a like stitch. The outside was closed by means

* Read before Iowa and Nebraska Veterinary Medical Association, at Omaha, Neb., Nov. 29, 1900.

of a heavy silk cord. Creolin dressings were used throughout.

The after treatment consisted in sponging out the uterus on fourth and sixth days. Removing outside stitching on sixth day, cleansing out, and replacing same.

Internally sodium chloride in drinking water was all the treatment this patient received. She remained down six days, was then assisted to her feet each day for three days, since which time she has been taking care of herself and lives to tell the tale.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,

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SURGERY OF THE EYE, EAR AND UPPER AIR PASSAGES.

(*Concluded from page 287.*)

Trachoma, Granular Ophthalmia, or Granular Conjunctivitis.—This disease involves the palpebral conjunctiva, and sometimes extends to that of the eyeballs; although it is a disease which generally originates on the inner surface of the eyelid, we will consider it among those of the eyeball because it frequently extends to the ocular conjunctiva, especially when not promptly treated surgically. In some instances granular ophthalmia will assume the nature of a carcinoma, which eventually involves the entire eyeball; this condition is not common in horses, but often found in the ox and dog. The disease in the early stage presents either numerous oval granulations that appear as prominent translucent papillæ which resemble frog-spawns (Van Mater's "Ophthalmology"), or by movable folds, each being distinct structures, separated from one another by furrows. In describing this disease we will consider the clinical features by dividing the course of the disease into four distinct stages:

1. Inflammatory stage.
2. Hypertrophic stage.
3. Cicatricial stage.
4. Atrophic stage.

1. *Inflammatory Stage* or *First Stage.*—In this stage the granulation or folds are separate and it manifests itself in a number of different phases, which we will describe separately:—

(*a*) In some cases the first stage begins with an acute inflammation, characterized by redness of the margin of the eyelid, and a congestion of the palpebral conjunctiva; lachrymation is increased, little or no mucoid secretion and generally an itching sensation. In the course of a week the mucoid secretion increases and after sleep the eyelids stick together but are usually easily separated. The granulation or folds increase in size and in the pain and irritation becomes more intense, which is aggravated by the use of the eye. During this stage the patient must be kept away from bright light. In the course of ten days or two weeks this phase terminates in the hypertrophic stage (2), excepting when it assumes a virulent form, which will be mentioned elsewhere.

(*b*) Another phase of the first stage of the disease which is very common among animals is ushered by a very severe acute conjunctivitis. The eyelid is extensively swollen, lachrymation is increased and accompanied by a mucoid or mucopurulent secretion; and the palpebral conjunctiva becomes thickened, forming folds, which are highly congested. The ocular conjunctiva is also thickened and in some instances injected. When the eye is closed for any length of time the margin of the lids adhere to one another, and at the end of two or three weeks the first stage ends in the second.

(*c*) A more benign phase of this stage is sometimes encountered, which is introduced without any acute inflammation perceptible. No hypersecretion or swelling is noticed with the exception of a slight thickening of the margin of the eyelids. These cases are usually sporadic and are generally detected if noticed at all during this stage (1) by the frequent winking. When the attendant or veterinarian inverts the eyelid the palpebral conjunctiva is found completely covered with granulations. The lachrymal discharges are normal and not accompanied by mucoid secretions as in the other phases of the first stage of trachoma. This phase will end in the (2) hypertrophic stage and run the same course as the other more painful phases already mentioned. This form is not contagious, which is probably due the scanty secretions during its course.

2. *Hypertrophical Stage.*—The three phases of the inflammatory stage, respectively, gradually merge into the hypertrophic stage. In this stage the conjunctiva which has been thickened by the inflammation common to the first stage becomes organized, firm and non-inflammatory. The duration of this stage is from five to seven days. The inflammation which accompanies

the closing of the first stage gradually subsides and no evidence of it remains at the termination of the second stage. No form of treatment has ever proven very effective for this stage of the disease excepting surgical treatment, and this should be done before corneal complications are noticed. Such complications as pannus are likely to occur before the end of this stage.

3. *Cicatricial Stage.*—As the hypertrophy of the conjunctiva passes away, small strands of cicatricial tissue begin to form; the granulations or folds lose their character and unite to form irregular masses. During this stage the conjunctiva contracts and in doing so it leaves hard masses or bands which greatly change the shape of the tarsal cartilage. As a result of this cicatricial contraction we frequently observe that there is a narrowing of the fissure which produces a partial ptosis.

4. *Atrophic Stage.*—This stage is only a continuation of the preceding marked by a diminution of tissue. This atrophy may interfere with the action of the orbicularis palpebrum, forming an *entropion.* It also destroys all the depressions and elasticity of the conjunctiva, and reduces the size of the entire sac, which permits the tears and secretion to flow down the cheek. Now and then there remain patches of conjunctiva that partially moisten the surface of the eyeball, but in time the entire surface becomes dry (*xero-phthalmos*); the cornea becomes opaque and the irritation caused by the dryness and cicatrices of the conjunctiva often produce ulcers of the cornea. Vision is impaired and sometimes totally lost.

All trachomata may not run the course mentioned, some may be more benign, while others may be more virulent. There is a disease of the eye found among cattle that has always appeared to us as a virulent type of trachoma; if it is not, it at least appears trachomatous in the early stage. Dr. O. E. Dyson, Inspector in charge of the Bureau of Animal Industry, Chicago, Ill., is of the opinion that the disease observed among cattle is carcinomatous in its nature, and that it runs the course of a carcinoma. George Jobson, M.D., V.S., Assistant Inspector of the Bureau of Animal Industry, has made some important investigations of the disease common to cattle, and wrote a series of articles which were published in the *Journal of Comparative Medicine.* Upon several occasions he has called our attention to the disease in its different stages, varying from small granulations at the internal canthus or on the membrana nictitans to a complete destruction of the eyeball. We are unable to state

whether Dr. Jobson has any new conclusions from his recent investigation as to the cause and origin of the disease, but with his assistance we shall in the future give a complete report of the disease. Dr. N. G. Houch, traveling inspector for the Bureau of Animal Industry, has expressed his willingness to assist in gathering data from which we may be able to ascertain the cause, course and treatment of the disease.

The reason that we entertain the idea that the disease observed in cattle is of a trachomatous nature, is from our experience with a trachoma in a dog that we had under observation for three years. The disease in the dog, however, never developed to the stage of those advanced cases which Dr. Jobson had under inspection for scientific purposes. When first noticed, the disease was confined to the palpebral conjunctiva above the nasal canthus, and extended from there to the membrana nictitans and ocular conjunctiva. In the course of three years involved all the coats of the eyeball, located on the antero-internal part of it. The dog was never treated for the disease, but a younger dog which was always with the one in question developed granulations on the inner surface of the upper eyelid and on the membrana nictitans. These granulations were treated surgically and never reappeared. The old dog was destroyed and the eye carefully examined (*macroscopically*); the diseased portion of the eyeball included the antero-internal zone of the sphere, extending to the inner third of the cornea, and the diseased portion upon examination resembled the carcinoma of the eye so frequently noticed in cattle. This trachoma presented the same clinical features noticed in the more benign forms; the first stage began with an acute inflammation, and increased lachrymation, which was followed by a hypertrophy of the conjunctiva and formation of cicatricial tissue; the conjunctiva never atrophied, but the cicatrices became granular, appeared inflamed, and extended to other tissues.

Etiology.—The cause of trachoma has been attributed to a diplococcus by some investigators, and to a fungus (*microsporon trachomatosum*) by others; with this fungus Mutermilch claims to have produced trachomata in calves and rabbits (*Annales d'Oculistique*, October, 1891, and May, 1892). So far as known there is no constitutional condition that renders an animal predisposed to the disease, but those of a lymphatic temperament are said to be the most susceptible, although there is no good reason for such a conclusion. In human surgery and medicine, the geographical distribution of the disease has received much

attention, and from investigations made on this line, it is learned that in certain inhabited portions of the earth the disease seldom occurs, while in others it is often epidemic. Domestic animals kept in overcrowded and poorly ventilated quarters, and those fed on poor non-nutritious food are prone to the disease. When granular ophthalmia is epizoötic, it is very probable that a contagium must contribute to its development, but when the disease begins without an inflammatory stage the indications are that it is due to some constitutional debility of the patient, resulting from its environment.

Diagnosis.—The veterinary practitioner will often find it difficult to differentiate trachoma from muco-purulent, and purulent conjunctivitis, folliculitis, lymphomata and fibroid or fungoid growths of the palpebral and ocular conjunctiva. The human practitioner recognizes a difference between each and trachoma, but the veterinarian does not have the same opportunity to make a correct diagnosis. In most cases the history is very indefinite, and often no cause can be found for the disease; the patient is brought to him after the disease has developed to the third or fourth stage, or probably has already terminated in some abnormality, such as pannus, corneal ulcers, trichiasis or entropion. Trachoma of the benign variety occasionally runs its course and terminates favorably without surgical attention, but in most instances it leaves some permanent abnormality of the eye or its appendages. In most cases, it is advisable to remove the granulation by surgical means, even if the disease assumes a benign form and is likely to make a favorable termination. The advantage of such treatment is observed by shortening the duration of the disease.

Treatment.—The treatment of trachomata may be divided into prophylactic, medicinal and surgical. *Prophylactic measures* are necessary in some instances, especially when the patient is kept among a number of animals and the surgeon has no assurance that it is not a contageous form of trachoma. The best method to adopt in every case is to isolate the patient during the first three stages or during the flow of discharges from the diseased eye, and to thoroughly clean the place, stall or kennel occupied by the patient before using it for other animals.

Medicinal Treatment.—Before beginning the treatment the cause of the disease should be determined if possible; if it is due to faulty alimentation, the regimen must be corrected; and if caused by the environment, the surrounding conditions must be improved; the internal medication will depend upon the indica-

tions; anything that will improve the condition of the patient may be administered. The local treatment is cleanliness and the application of mild antiseptics and germicides; for this purpose boric acid may be used. If bichlorid of mercury is used the solution should be weak (1.15000). Formalin has also been recommended in the strength of 1.3000. The eye should be bathed three or four times a day with either of the above mentioned solutions for at least ten or fifteen minutes each time. When the acute inflammation subsides the granulations may be touched slightly with the mitigated stick of nitrate of silver every two or three days. In ocular complication it may be necessary to use mydriatics. When the condition of the palpebral conjunctiva improves the corneal complications will disappear.

Surgical Treatment.—The surgical treatment for trachoma may consist of grattage, expression or curetting. Each of these procedures have their indication; grattage and expression should be used when a large area of the conjunctiva is involved, but when the granulations are localized, they can easily be removed with a curette.

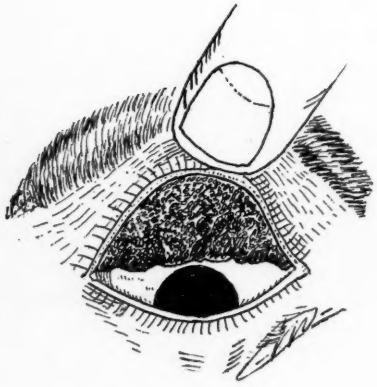

FIG. 54.
TRACHOMA.

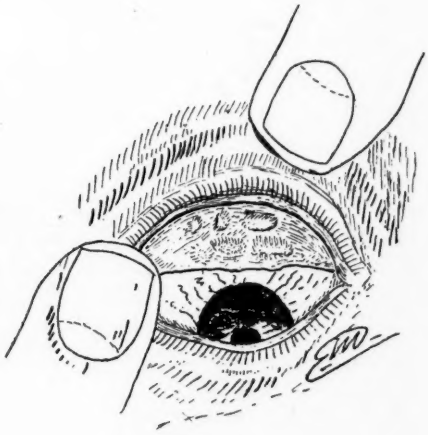

FIG. 55.
CICATRIZATION OF TRACHOMA WITH PANNUS.

Grattage.—The instruments needed for the operation upon trachoma are: roller or trachoma forceps (Fig 56); a large and small pair of artery forceps; a tri-bladed-scarifier; pair of scissors; probe; spatula; nail-brush; sponges and dressings. Grattage is an operation recommended by French surgeons, and is

very simple but painful; patients treated in this manner should be given a general anæsthetic. The eyelid is inverted and the conjunctiva involved scarified as far back as the fornix, and when the ocular portion of the conjunctiva is involved, it should be subjected to the same treatment, if the granulations do not extend over too much of the anterior surface of the eyeball (when a large area of the ocular conjunctiva is trachomatous, the best method of treating is by expression). The most convenient instrument for scarifying is a three-bladed scarifier, although this can be accomplished with any similar instrument. When the diseased portion is thoroughly scarified, it is scrubbed with a sterilized nail-brush until all the trachomatous tissue is removed; it is then thoroughly washed with sterilized water or some mild antiseptic solution. After careful cleaning, ice compresses, or cloths wrung out of ice-cold water, must be applied to the eye. The object of these cold applications is to relieve pain and prevent swelling, and should be kept in place and changed, or cold water poured over the compress for at least two hours after the operation, and repeated thereafter at intervals as often as indicated.

If the operation is done aseptically, and care taken not to mutilate the subconjunctival tissue more than necessary, but little reaction follows and the wound improves rapidly.

The after-care consists in preventing undesirable sequelæ, such as secondary infection or adhesions of ocular and palpebral conjunctiva. To prevent these adhesions a sterilized probe or spatula must be introduced once a day into the *cul-de-sac* and all unions of the two membranes carefully broken down. The subsequent treatment will be governed by the condition of the parts involved, mild antiseptics, astringents, mydriatics, etc.

The Operation of Expression.—This is an operation that is performed in various ways and the deviation is generally governed by the extent and severity of the disease. When the folds or granulations are located in small groups they can be expressed with the thumb-nails, artery or dissecting forceps, but when a large area is involved this method is too tedious. Several varieties of forceps have been devised for this purpose, and among the most useful are Knapp's roller forceps (Fig. 56–*B*) and Noyes' trachoma forceps (Fig. 56–*A*).

The procedure in general is as follows: The eyelid is inverted with an artery forceps applied to the ciliary margin, until as much of the conjunctiva as possible is exposed, then the

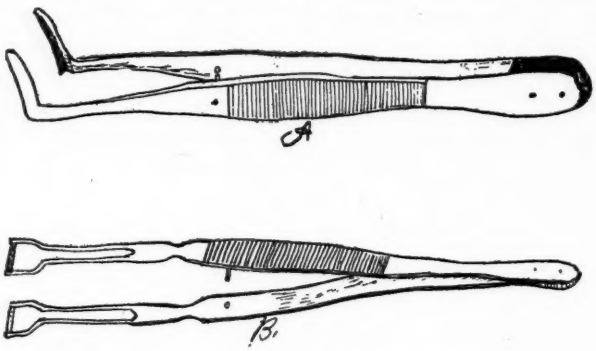

FIG. 56.
A. Noyes' trachoma forceps.
B. Knapp's roller forceps.

roller or trachoma-forceps is used in the following manner: one blade of the forceps is pushed as far back as the fornix, and the other blade is placed on the ciliary border of the eyelid; then, by a milking process the morbid material in the folds or granulations is squeezed out thoroughly; this application of the forceps is continued until the entire surface involved has been subjected to this squeezing process. The granulations on the border of the lid are expressed by placing one blade upon the cutaneous surface of the lid. After the expression is completed, the entire surface thoroughly washed with warm water or mild antiseptic solution, and cold compress applied as recommended after grattage of the surface. The sequelæ and after-care are the same as those already mentioned in the preceding operation. In such instances absolute rest is necessary and such patients should be kept in a quiet stall free from flies, (1) because they (flies) deprive the patient of its rest, and (2) they may spread infection (*Rev. XXV., No.* 4, *p.* 268, "*Dissemination of Infectious Diseases by Insects*," *C. F. Dawson, M.D., D.V.S.*)

Curetting.—If the trachomatous growths are confined to groups and involve only a small part of the conjunctival surface, they can be removed with a curette. The eyelid is inverted in the same manner as for other operations upon the conjunctiva, and the granulations curetted with a small curette. The after-treatment is the same as that following grattage and expression.

SURGICAL ITEMS.

House-to-house Operating means house-to-house isolation and for this the room-to-room risks of infection in the hospital are lessened to a minimum degree. Surgical cleanliness is surgical godliness, and every time we forget this we add to our

death rate. Chemical perfumes of varied kinds will never displace soap and hot water judiciously applied in surgery.—(*Edwin Ricketts, International Journal of Surgery.*)

Dr. A. J. Ochsner, Surgeon-in-chief to the Augustena Hospital and St.,Mary's Hospital; Professor of clinical surgery in the College of Physicians and Surgeons, Chicago Ill.; and chairman of Section on Surgery and Anatomy, American Medical Association, 1900-1901, in a clinical lecture published in the *Clinical Review*, refers with special emphasis to the importance of rest and moist antiseptic dressings in the treatment of infected wounds of the extremities, which we consider equally applicable to wounds on the legs of domestic animals.

Wounds of the extremities, such as wire cuts, nail-pricks, punctures and bruises, often cause severe infection of the portion of the leg between the wound and the body. The septic material conveyed from the seat of infection to the lymphatic glands by the lymphatic vessels is scattered while on its course to the glands and infects the structures that surround vessels. At the lymphatic glands septic organisms are arrested and probably attenuated, and when the glands are overtaxed they suppurate and break open by way of least resistance. The lymphatic glands are organs which are intrusted with a function to protect the animal organism against infection and intoxication. The histological and anatomical structure of lymphatic vessels is much the same as veins, and the lymph that accumulates in the periphery is propelled to and from the lymphatic glands by muscular activity. This fact in itself is an important factor in the treatment of wounds of the extremities. If a patient accidentally receives an injury to the foot or leg which cannot be made aseptic to a certainty, it should be "laid up"; absolute rest is absolutely necessary in the treatment of doubtful wounds of the extremities in order to prevent the extension of inflammation. The next important point in the treatment of these injuries is the application of a large, moist antiseptic dressing, consisting of oakum or absorbent cotton rolled with a good strong bandage and a rubber cloth applied around the entire dressing to confine the moisture to the leg, Fresh antiseptic solution is poured into the dressing every two or three hours in order to keep skin of the inflamed portion constantly in contact with the moisture. The dressing must be renewed on the second day and the extremity carefully examined for abscesses which may form, although most cases get well with the formation of secondary abscesses. After the second day the dressing

must be changed every day and the extremity carefully examined. This treatment is continued until the inflammation subsides. No matter how slight the infection may appear at first it should be treated by the application of a large moist antiseptic dressing.

It is impossible to ascertain by the first appearance of a suspicious wound, to what degree of severity it will develop. Severe inflammation in the extremities is often followed by undesirable results, such as abscesses, hypertrophy of connective tissue, and necrosis of tendons, sheath and ligaments.—(*E. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D V.S., Bureau of Animal Industry, Milwaukee, Wis.

VAGINISMUS IN A BITCH—CURE RESULTING FROM RESECTION OF THE NERVUS PUDENDUS [*Prof. Dr. Parascandolo*].—The vaginismus, or the hyperæsthesia of the external genitals, may result in the spasmodic contraction of the constrictor vaginæ and the other muscles of the pelvic cavity. A case of this kind was observed by P. in a strong Great Dane. As reported by the owner, the animal could not be covered, in spite of being in heat and seeming to have a great desire to receive the male. But at the moment of the entrance of the penis the bitch made efforts to run away, howling violently, attacking the dog and rushing away as if insane, finally collapsing from violent spasms. The convulsions lasted for about 20 minutes. The examination did not show any visible diseased condition of the genitals. On the other hand, a digital examination of the vagina or rectum was only possible when made under the influence of an anæsthetic, as when the vulva was touched it contracted to such an extent that the introduction of the finger seemed impossible. During the examination the bitch awakened too soon from the effect of the anæsthetic, and she would have attacked all present if she had not been tied to the operating table. The spasmodic contraction of the vulva observed at this time was so violent that the examining finger felt as if it was squeezed in a vice. The animal was placed under medical treat-

ment, which was tried for a year, but proved unsuccessful. P. therefore decided to resect the nervi pudendi, of which on each side a piece of 2 cm. was extirpated. The wounds were stitched, and healed very rapidly. Four months after the operation the bitch was covered without difficulty, became pregnant, and enjoys since then the best of health.—(*Wochenshr. f. Thierheilk.*)

ANÆSTHESIA BY INJECTING COCAINE INTO THE SUBARACHNOIDAL SPACE OF THE SPINAL CORD [*A. E. Mettam*]. —Bier in Kiel, Seldowitsch in Russia, and Corning in Chicago, described this anæsthatizing method, but without awakening a great interest for the same. Tuffier was first to call the attention of the profession to this method by his articles, and soon was followed by many imitators. The same treated a young man for an inoperatable osteosarcoma of the ilium. For the relief of the intense pain from which the patient suffered, morphine injections were given, which proved entirely effectless. On the other hand, a subarachnoidal injection of cocaine into the spinal cord produced in a few minutes the desired effect. Unfortunately the relief only lasted for two hours. Two days after the injection was repeated with the same good results. Since this trial Tuffier applied this method in over 250 severe operations on different parts of the body situated below the diaphragm. A fine trocar is inserted into the intervertebral space of the last lumbar vertebra, until it reaches the spinal canal, and then further into the subarachnoidal space, when the injection is made of 1 cm. of a 2 per cent. solution of cocaine. The author experimented with this method in veterinary practice, and is very well satisfied with the results obtained. In horses the length of the trocar is to be 10 cm. and 15 mm. in diameter. The place of puncturing is on a line which connects both internal angles of the ilium. The horse hardly moves during the operation; all that is necessary is to apply a twitch and to hold up one foot. In cattle the operation is performed at the same place and with the same trocar; here the operation is considerably easier, as the intervertebral spaces are wider, but more difficult to puncture, as the skin is thicker. Also in dogs the place of operation is found in the same manner. The best way to puncture is with a hollow needle of 6 cm. long and 1 mm. in diameter. The experiments convinced the author that cocaine solution can be safely injected into the spinal cord of animals, producing a satisfactory analgesia. All operations on the hind extremities and in, or outside the ab-

dominal cavity, can be performed in a painless way by using this method (laparotomy, herniotomy, castration, tenotomy, neurectomy, operations on the rectum, uro-genital apparatus, foot, etc.). Doses to produce the desired anæsthesia can be made as follows: for horses and cattle, from 1 to 3 cm., depending on the size; for dogs, 1 cm. of a 2 per cent. cocaine solution.—(*Veterinarius.*)

THE TREATMENT OF PARTURIENT PARESIS WITH IODIDE OF POTASSIUM [*E. Hauptmann*].—The action of iodide of potassium in parturient paresis is proved without any doubt. The mode of administration of this specific remedy, as first recommended by Schmidt-Kolding, has been modified. By the administration of Lugol's solution (1 gm. iodine, 5 gm. iodide of potassium, and 100 gm. sterilized water, 25 gm. of this to be injected into each teat of the mammæ) as used and recommended by Kunnemann, the author recorded 10 cases of bad results from this treatment, in spite of the fact that it was used in every case during the early stages of the disease. Dr. Peter in a recent article advises the introduction of the iodide of potassium directly into the blood circulation. He injected in the time of 10 minutes 10 gm. of iodide of potassium, in 2000 gm. of sterilized water, at the temperature of 38° C. intravenously. This method was successful in several cases. The injection into the mammæ or jugularis requires great care and strict asepsis, which is often, even for the professional man, not practicable. These difficulties caused Hauptmann to experiment on the internal administration of the iodide of potassium, and, as he states, with the best results. The drug was given in a clear solution. In case some should escape into the trachea, it would cause no harm, on account of the complete solubility of the iodide of potassium. By this procedure Hauptmann obtained as good results as by the Schmidt treatment. The action of the iodine manifests itself at the same time as when injected into the mammæ. In case the action is delayed, in eight hours the dose can be repeated, or reduced to half, depending on the circumstances. The dose was about 10 gm. with a slight variation, depending on the weight of the animal, which was accordingly regulated. As heart stimulants digitalis was given in the form of tincture, coffeinum natriosalicylicum, ammonium carbonicum, and alcohol were also used. The further experiments in introducing the iodide of potassium by the way of the uterus, which, as known, has a great power of resorption, proved also to be successful, having the same curative effects and also the same

secondary manifestations (iodism) as when given internally, intramammary or intravenously. As the result of Hauptmann's investigations, he doubts whether the curative action of the iodide of potassium results from the direct contact with the germs by the intramammeal injection as stated by Schmidt. Following is a statistic regarding the results of treating parturient paresis with iodide of potassium in Austria: From July 1, 1899, to June 30, 1900, by 41 county veterinarians of Austria, in 172 cases of milk fever the iodide of potassium treatment was applied; of these there were 123 severe cases, 18 of a middle, and 31 of a light grade. Of these 129 cows 75 per cent. were cured completely; 32 (18.6 per cent.) were slaughtered; death resulting in 11 (6.4 per cent.) cases. By last year's statistics 75 per cent. recovered and 21 per cent. died. After the injection was made of 10 gm. of iodide of potassium in 1 liter of water, before 10 hours' time elapsed, in 76 cases the cows got up; before the 20th hour, 30 more cases, while the other 23 cases required a still longer time. Bad results from the effect of the iodide of potassium could not be observed.—(*Thierärzt. Centralblatt.*)

CONTRIBUTION TO THE TECHNIQUE OF THE DIAGNOSIS OF GLANDERS.—Up to date the most positive diagnosis of glanders is obtained by the test inoculations. The cat is recommended as the cheapest and most easily obtainable animal for inoculation, in which on the third day after the inoculation a swelling and on the fifth to seventh day the typical glandular nodules are to be present. The Russian N. Godzjacky recommends the following procedure: Inoculation of the cat with nasal discharge. On the third day the cat is destroyed, and the bacteriological examination of the internal organs is made (spleen, liver, kidney testicle, etc). From the spleen eight cultures are made on potatoes and on agar. Should the bacteriological examination have a negative result, then a second or even a third cat is to be inoculated. In case the inoculated culture does not give positive results in three days, the second inoculated cat is destroyed and examined as No. 1. Should the first investigation give positive results the diagnosis of glanders is proved on the fifth to seventh day. On the other hand, if the positive signs are only obtained from the examination of the second, eight to 10 days pass away before the results are known. In case of the absence of a nasal discharge, the inocnlation is made with extirpated parts of the inferior maxillary gland.—(*Thierarzt. Centralblatt.*)

FRENCH REVIEW.

By Prof. A. Liautard, M.D., V.M.

Woman's Milk for Raising Puppies [*By W. Ben Danow*].—It is not always enough to bring a puppy into the world, even at the expense of the mother's death; there are other necessities which one may have to provide; such was this case. A small English slut had given birth to a puppy, but was taken with metro-peritonitis, which, notwithstanding all strict treatment, proved fatal in a short time. And while the mother was carefully treated, the little fellow received all possible attention in the shape of comfortable bedding of wadding, nursing with bottles, sterilized milk, etc., but all these did not seem to answer. The puppy was restless and constantly snoring in his bed; he refused the food or threw it up, and his life was in danger. Yet, the owner wanted it saved, if possible. First, an artificial hatching room was bought, with sides padded with wadding and kept at an even temperature; the little occupant could then move about without the risk of a change of temperature. For the second and very important part, the feeding, a woman wet nurse was hired. The dog took at once to the teat and sucked. He was thus fed for 70 days. During the time that he was fed, he had some bowel troubles and weakness of the hind legs, which subsided under treatment. He was weaned by degrees, but for the first 25 days of his life he took woman's milk exclusively. Born on the 13th of August, he showed in September an elevation in his weight of 300 grammes, of 100 grammes in October, of 48 in November and 245 in December. At the last time he was weighed he turned the scale at 1482 grammes.—(*Rev. Veter.*)

Intra-Mediastinal Diaphragmatic Hernia in a Cow [*By Mr. Delmer, Alfort*].—This animal had entered the ward of bovine pathology on February 13th and was kept up to March 4th, when she was destroyed for dissection. Her case was unusual as much by the difficulties presented to make a diagnosis as by the nature and extent of the lesions. During her stay in the barns of the ward she presented nothing typical; the only symptom which was daily observed being a chronic tympanites, insufficient to express a true reason for one special form of disease. The appetite was irregular, there was slight constipation, repeated tympanites after each meal; no tuberculosis, no pain of the abdomen on pressure, respiration perfectly

normal, no change in auscultation or percussion, no pain, no disturbance in the circulation. The animal being killed for dissection the following lesions were discovered, explaining at last the cause of the meteorism, but at the same time showing what lesions can sometimes exist in animals and yet fail to give rise to any disturbance of importance. In the diaphragm, the muscular portion remained normal, but the phrenic part was reduced in size to about only a few centimetres in width. There was a rupture through it, in which the œsophagus passed and which measured 25 cent. in height and 20 in width, and contents of the abdomen had passed into the thoracic cavity. Contained in a hernial sac, formed by the layers of the posterior mediastinum, which were separated, there was found the entire mass of the omasum, the three anterior quarters of the reticulum, the anterior extremity of the abomasum, measuring about 10 centimetres, and the lower portion of the liver. The omasum had retained its normal size and contained cakes of dry food between its lamellæ; the reticulum was small and empty, the displaced portion of the liver was atrophied and reduced to its fibrous envelop. The abomasum was normal. The mass of all these organs formed on front of the diaphragm an ovoid lump, related in front to the heart, above to the lungs, behind to the lower portion of the diaphragm, and below to the sternum. It extended laterally from the posterior border of the fourth rib to the anterior of the seventh without, however, coming in contact with their internal faces. The heart was pushed forward and the lungs pressed toward the upper part of the thorax; they were small and more or less affected with interalveolar and subpleural emphysema. All the other organs were healthy.—(*Bullet. de la Soc. Centrale.*)

DOUBLE INGUINAL HERNIA IN A COLT—RADICAL OPERATION—RECOVERY [*Dr. A. Fontaine*].—The subject was a colt, aged three and a half months, which was taken one night with colicky pains and was found affected with hernia of both sides. On the left it is as big as a child's head, on the right as large as the fist. On account of the large size of the hernia it is decided to operate at once, and to resort to the *modus operandi* for radical cure, by a process analogous to that used in human surgery. The only possible difficulty was the presence of the testicle and its *gubernaculum* in the protruding mass, and the question then was whether it would be better to remove it or return it into the abdomen. It was decided to amputate it. With all antiseptic precautions as far as sterilization of the instru-

ments, material for dressing, ligatures, and so on, the animal placed under chloroform was operated on, the manipulations being divided into four steps. In the first the skin being disinfected, a longitudinal incision was made on the skin over the most prominent part of the tumor so as to expose the hernial sac, which was raised with forceps. Then the hernia was reduced by returning the contents into the abdominal cavity. In the second step, the sac was opened, the testicle taken hold of and amputated, after a solid silk ligature had been applied on the peduncle which was formed by the gubernaculum and the spermatic blood vessels. The stump, well dried and disinfected, was returned in the abdomen. The sac was then carefully separated from its external attachment and when the dartos appeared free, another strong ligature was applied over it, as high as possible, the sac below excised and the stump pushed back after disinfection. The inguinal opening was then closed in the third step of the operation with continuous suture of catgut quite thick. In the fourth step the skin was closed with separated stitches near to each other. A triangular bandage kept an antiseptic dressing over the wound. Operated on the 13th of August, the wound of the right side was entirely healed on the 30th, the left required a few days longer. This result was certainly very good and the *modus operandi* applied to animals of larger size and older could certainly do as well as the old method of closing the sac with clams. The author suggests in those cases, after the suture of the inguinal opening, in the sewing of the external ring using a needle slightly curved and involving only the aponeurosis of the great oblique.—(*Rec. de Med. Vet.*)

AN EPIDEMY OF HORSE-POX [*By Dr. Moreau*].—The author has observed a very interesting epidemy which he reported at the Academie de Medécine. The diagnosis had not been made in the patient who was first affected ; the disease was limited to the dorsal face of the hands and fingers and presented all the characters of variola. It seemed that the sick man had a mare, which had been recently covered, and had on the vulva sores similar to those of the owner. The son having taken charge of the mare, while the father was ill, took the disease and had a similar eruption on the hands. An inquiry made in the town revealed the fact that eight other persons had contracted the same trouble and had similar eruptions in caring for mares which had been covered in the same place where an epizooty of horse-pox had existed and which had also presented on

the vulva, on the croup, on the lower part of the legs, on the face and on the skin, pustules of the affection. Out of 200 mares 170 were affected ; there were no deaths. The treatment consisted in washing with lysol solution of the hobbles, the genital organs of the animals and the hands of the assistants. Twenty two men had the disease, but no complications except epitroclean and axillary adenitis. The eruption appeared ordinarily on the fourth day and reached its maximum of development between the eighth and tenth days. Had previous examination been made in this case, the contagion would have been avoided and many days of labor not lost.—(*Bulletin Medical.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

CONTRIBUTION TO THE STUDY OF TUBERCULOSIS IN THE HORSE [*By Prof. T. Hendrickx*].—In the presence of the incomplete literature relating to equine tuberculosis, the author contributes to the history of that form of the disease by relating two cases which he had the opportunity to follow until the time of death and where the diagnosis was confirmed by post-mortem. In the first case the animal remained ailing for some time, losing flesh, but still able to do his work. Close examination, minute observation, analysis of his urine, test with malleine, had failed to explain his manifestations. Tuberculin had only given a reaction of 1.6°. This test was repeated five times, four days apart, and the reaction was 1.4°, 1.3°, 1.5°, 1.2°, none for the last. After the third injection a new symptom, which had been missing before, made its appearance—the one upon which Nocard and Leclanche insist in a special way to the point of view of diagnosis. An abundant polyuria showed itself and lasted until the time of death. It was only towards the end of the disease that respiratory troubles were observed on auscultation, viz., harsh vesicular murmur, with here and there mucous râles—no cough, no nasal discharge. The emaciated condition at the time of death was surprising. At the post-mortem, acute tuberculous lesions were found in the lungs and chronic tubercles in the spleen, some of which were caseous or calcareous. The splenic glands were also affected. The second case exhibited very nearly the same symptoms—

loss of flesh, capricious appetite, no cough, no nasal discharge, respirations normal. Examination per rectum revealed in the left flank an enormous tumor, as big as a man's head, which was found to be a tuberculous growth of the spleen. A first injection of tuberculine gave a reaction of 2.8°. This was followed by three others, which gave respectively reactions of 1.9°, 1.6°, 0.8°. After the fourth day polyuria then became manifest and lasted until death, which occurred after three weeks. At the autopsy lesions were found in the lungs, identical to those of the first case. The abdominal organs contained only a few caseous tubercules in the liver and right kidney. The spleen weighed 7 kilos 250 grammes, and showed an enormous mass of chronic tuberculous lesions. In other words, in both cases lesions of acute miliary tuberculosis of the lungs were found, with chronic splenic alterations having certainly existed a long time before those of the lungs.—(*Annales de Bruxelles.*)

INCOMPLETE OBSTRUCTION OF STENO'S DUCT [*By M. Hermans*].—An Irish horse presented on a level with the groove of the left lower maxillary bone a tumor, the size of a hen's egg. Running from it in the direction of the parotid there is a hard cord. The tumor is movable, not painful, very hard in its centre; and when it is displaced the hard cord, which is Steno's duct, moves with it. The growth exists since some time, but has recently assumed larger dimensions; yet the horse does not seem troubled by its presence. To all appearances it is a calculus and its removal is indicated. The horse is placed in stocks, the parts thoroughly disinfected, and a careful dissection made over the course of the duct and over the tumor. The canal was then opened, expecting to see the calculus come out, but, instead of it, by direct probing, it is discovered that a regular bony lining is protruding into the cavity of the canal, forming part of its walls. This bony envelope was then extracted. The wound well cleaned, stitched, and covered with iodoformed collodion. The animal was not disturbed by the operation, continued to chew his food, and after two weeks the wound was entirely closed, leaving only a little thickening, which was relieved by frictions of ointment of iodide of potassium and extract of hemlock. As to the starting cause of the bony formation, the author thinks it was the result of a lesion of traumatic nature, probably a bruise against the manger.—(*Annales de Bruxelles.*)

GENERALIZED SARCOMATOSIS IN A COW [*By Prof. T.*

Hendrickx].—Sarcomatous tumors have been observed as primitive lesions in a great number of organs. In many cases they have remained isolated and again frequently have become generalized. There remains an obscure point in their etiology, but without allusion to the parasitic or microbian nature, the author believes that the nature of the soil (the constitution of the animal) has much to do with its growth. Still, there are cases where the effect of a traumatic action cannot be ignored. The following seems to justify this theory. A seven-year-old cow receives a violent bruise on the external angle of the ischium, which is followed by the formation of an hæmatoma. Its resorption being very slow, the tumor was opened and treated by creolin injections. But, instead of disappearing thus, its bottom began to granulate and the spreading tumor increased gradually until it became as big as a man's head. It then forms a rounded enormous tumor, very wide at its base and spreading with the tissues all round. On its outside there open four irregular fissures or fistulas, from which fœtid pus escapes. The tumor is not painful and, as proved by the microscope, is of sarcomatous nature, belonging to the encephaloid variety. Taking the condition of the animal in consideration, operation is decided upon. A circular incision is made above the base and the skin around it dissected to isolate the tumor as much as possible. It is then observed that the neoplasm is not entirely subcutaneous, but branches off under the ischio-tibial muscles. At any rate by careful dissection it is extracted with comparatively very little hæmorrhage; it weighed 16 pounds. The broad operated field is then covered with a pad dipped in phenicated water and held in place by stitches. During the first days, everything seemed to go on very well, but when after a month of attentive treatment the wound was considerably reduced, abnormal granulations of bad nature began to grow, they resisted all forms of treatment, kept up proliferating and after a certain length of time the general condition of the cow appeared to give way, and, notwithstanding heavy feeding, rapid and comple emaciation followed, the animal died. At the post-mortem a very great number of sarcomatous encephaloid tumors, from the size of a pea to that of a hen's egg, were found in every parenchymatous organ, lung, liver, spleen, kidney. At the seat of the operation a comminuted fracture of the external angle of the ischium existed, with a large, loose splinter. The author believes that in this case, the visceral lesions were developed after the ischial tumor, which had for

cause the traumatism the region had received. Could such condition have occurred, had not the animal been under the influence of a special diathesis? Evidently no.—(*Annales de Bruxelles.*)

BIBLIOGRAPHY.

IL GRAN SIMPATICO NELL' UOMO E NEGLI ANIMALE (The great sympathetic in man and animals.) By Prof. F. Boschetti.

Has the last word been said about this important nerve, the *great sympathetic*, and can scientific medical men remain satisfied with all that has already been written about it—and concerning its history, physiology, pathology and therapeutics, made in a comparative point of view—that is, in human as well as veterinary medicine. Dr. F. Boschetti, Professor at the University of Parma, does not believe it; he has made many researches through all the literature which he has found, and has recently brought out an excellent little work, illustrated with plates, where he reviews the entire subject, and from which he draws the following conclusions:

(1) The great sympathetic has to this day been studied but little by anatomists, physiologists, pathologists and practitioners of human medicine. It has almost been entirely ignored in veterinary medicine.

(2) Taking in consideration the works of Lobstein, Eilenberg, Guttmann, White, Trumet, and specially those of De Giovanni, its pathology and clinical history must be revised from the first to the last, in bearing in mind its treble function (vaso-motor, secretory and sensitive), not only as an independent nervous system, but in its relations with the cerebro-spinal system.

(3) The sympathetic has to be studied to the point of view of comparative anatomy, physiology, and pathology in man and animals.

(4) Neurosis in general, neurasthenia in particular, find often their explanation in the great sympathetic, which may be altered primitively by specific causes (genital, intestinal, infections, etc.) or by intellectual or physical excesses. But the first causes of neurosis and of neurasthenia are passions which act upon the cerebro-spinal system and upon the great sympathetic in giving various primitive or secondary forms.

(5) Pharmaceutical therapeuty is but of small and relative value in the pathology of the sympathetic as in pathology in general.

(6) In the actual therapeuty, the first place belongs to physical agents (electrotherapy, hydrotherapy, climatic therapy, etc.) and more specially to cinesitherapy (vibratory or Swedish therapy) and to tremolotherapy.

(7) Tremolotherapy is the most perfect to the scientific point of view, the most beneficial in practice in cinesitherapy of viscera of the nervous system and specially of the great sympathetic.

(8) Opotherapy, with the juice of the great sympathetic, constitutes a new mode of treatment for the nervous system and specially for diseases of the great sympathetic. A. L.

CLINICAL VETERINARY MEDICINE AND SURGERY. By Prof P. J. Cadiot. Translated by John W. Dollar, M. R. C. V. S.

This is a work of over 600 pages and is divided into parts or sections, the majority of which consist of a series of lectures and clinical demonstrations given by Prof. Cadiot to the veterinary students of the veterinary school of Alfort. The work as a whole is an excellent example of the exact and scientific manner in which that able and painstaking veterinarian performs all of his work. The balance of the work consists of numerous reports of cases met with by Dollar in his practice or taken by him from the files of English veterinary periodicals. In the past, there has been a woeful lack of reference works in the English language on the subject of clinical veterinary medicine and surgery, and the appearance of such works have always been hailed by veterinarians as a distinct addition to the all too meagre literature of our otherwise rapidly advancing science.

The work under consideration is well illustrated with woodcuts, which serves to make clear to the reader the modus operandi of performing the various operations described in the text. The book describes in a clear and concise manner the methods of performing nearly every known surgical operation performed upon domestic animals, and also gives a very full account of the proper therapeutic measures to be carried out after such operations. Among the more important operations described is that of cryptorchidotomy as performed on the horse by the Belgian method; neurectomy of the median and ulnar nerves; Bos's operation of neurectomy for spavin; amputation of the penis, etc., etc. A complete account is given of the history, etiology and treatment of contagious equine pneumonia; hæmoglobinuria (azoturia) of the horse; together with exophthalmic

goitre of the same animal. Eczema in the dog, horse, and tuberculosis in the feline, canine, equine and avian species is treated at length in the work.

In the chapter on tuberculosis of the cat the author gives an interesting account of the various manners in which that animal contracts the disease. The author states that contrary to the general opinion, three-fourths of the cases of tuberculosis among cats are due to infection received from persons suffering from tuberculosis. This statement coincides with my own observations extending over a period of several years, during which time I have observed that in families in which tuberculosis is prevalent, you will almost invariably find tuberculosis to prevail among the feline members of such a family. There has been heretofore a generally accepted opinion among veterinarians that tuberculosis is a rare disease among horses. Prof. Cadiot gives an interesting account of this disease as it exists in the horse. He says: "Bearing in mind the varying forms which tuberculosis may assume in the horse, it is rare that some of the complex assemblage of symptoms fails to suggest the correct diagnosis. The final conclusion is assisted by auscultation, percussion, rectal exploration, and palpation of accessible lymphatic glands, and is confirmed by bacteriological examination, injection of tuberculin, or inoculation." Prof. Cadiot states that the injection of 30 centigrammes of tuberculin is followed in a tuberculous horse by a reaction, which usually attains its maximum about the fifteenth hour, the temperature rising about 2 or 3 degrees C. M. Cadiot also states that the proportion of pulmonary tuberculosis in the horse is about 70 per cent.; tuberculosis of the mesenteric and sublumbar glands and the spleen, about 40 per cent.; of the liver, pleura, and peritoneum, 20 per cent.; of the intestines, 15 per cent. He also states that tuberculosis of the kidneys is rare in horses.

Part V of the work contains an interesting account of the treatment of tuberculosis in the guinea-pig, with the parotid saliva of horses collected aseptically. Although these experimental injections of parotid saliva failed to produce any beneficial therapeutic effects, it nevertheless serves to show with what tireless energy scientific investigators are seeking an antidote that will stay the ravages of the great white plague, tuberculosis. The work also contains an account of the serum treatment of glanders carried out by the author and other European investigators—also an account of his experiments with vanadine used subcutaneously as a therapeutic agent in

the treatment of pneumonia in the horse and dog, also in the abdominal form, of influenza, distemper and other forms of wasting diseases—also an account of the author's experience with iodine used intravenously as a therapeutic agent in various diseases.

This work, containing as it does the ripe experience of the author, who may be considered one of the foremost surgeons and clinicians of the day, contains a vast amount of exact scientific information of the utmost value to the busy workaday practitioner, while for the student of either human or comparative medicine, no better book could be placed in their hands, that will give them a clear insight into the many intricate problems with which they are daily confronted.

The paper, printing and binding of the work are all that the most critical could desire, and reflects credit upon the efforts of the firm of W. R. Jenkins. W. J. M.

INDIANA'S NEW VETERINARY LAW.

The following bill (Engrossed Senate Bill No. 291) has become a law, and, while it is not all that could have been desired, the profession of the State feels that it is better than no law, and is a step in the right direction:

A BILL FOR AN ACT ENTITLED AN ACT TO DEFINE VETERINARY MEDICINE AND SURGERY, AND REGULATING THE PRACTICE OF VETERINARY SURGERY OR ANY BRANCH THEREOF IN THE STATE OF INDIANA.

SECTION 1. *Be it enacted by the General Assembly of the State of Indiana*, That the practice of veterinary medicine or surgery within the meaning of this act, shall be any act or operation, the prescribing or giving of medicine for the relief of diseases, injury or accident, for the correction of habit, defective act, deformity or vice, spaying, castration, obstetrics, and dentistry upon any domestic animal.

SEC. 2. The right to use the degree or title veterinarian, veterinary surgeon, doctor of veterinary medicine or surgery, doctor of comparative medicine, or any derivative thereof, shall be limited to graduates of reputable veterinary colleges.

SEC. 3. Any person practicing veterinary medicine or surgery and having a degree from a reputable veterinary college, shall be exempt from jury duty and shall be entitled to expert

witness fees when summoned or required to testify in any civil action when such testimony relates to matters connected with the veterinary profession.

SEC. 4. It shall be unlawful for any person to use any degree or title pertaining to the practice of veterinary medicine or surgery, other than as provided in section two of this act, and any person so doing be subject to a fine of not less than twenty dollars nor more than fifty dollars.

SEC. 5. It shall be unlawful for any person to practice veterinary medicine or surgery, or any branch thereof, who is not a graduate of a reputable veterinary college: *Provided*, That nothing in this act shall apply to persons who have practiced veterinary medicine or surgery in this State for five consecutive years as a livelihood, immediately preceding the passage of this act, as certified to by five freeholders before the county clerk where he resides, nor for the operations of castration, spaying, dehorning, or assistance rendered in emergencies, nor shall it apply to persons practicing upon their own animals. Any person so doing shall be subject to the same penalties as provided in section four.

SEC. 6. All persons qualified under this act to practice veterinary medicine and surgery, shall have the same recognition in prescription work as now accorded to regular practitioners of medicine, by druggists and pharmacists.

SEC. 7. All persons desiring to practice veterinary medicine and surgery in the State of Indiana, shall, within ninety days after the taking effect of this act, file with the clerk of the court of the county in which the applicant resides the necessary evidence as to the qualifications to entitle them to practice according to the provisions of this act. Upon filing such evidence the clerk shall issue to such applicant a certificate to practice in accordance with the provisions of this act, in any county in the State of Indiana, such blank certificates to be furnished by the State Board of Health. The county clerk shall keep a record of all persons in each county qualified to practice according to the provisions of this act. For such services the clerk shall receive from each applicant the sum of one dollar for such registration.

SEC. 8. All laws and parts of laws in conflict with this act are hereby repealed.

MR. SPEAKER: Your Committee on Medicine, Health and Vital Statistics, to which was referred Engrossed Senate Bill No. 291, entitled a bill for an act entitled an act to define vet-

erinary medicine and surgery and regulating the practice of veterinary surgery or any branch thereof in the State of Indiana, introduced by Mr. Keyes, has had the same under consideration, and begs leave to report the same back to the House with the recommendation that said bill be amended by striking out in section two the words, "graduates of reputable veterinary colleges," and insert in lieu thereof the words, "to those holding a license to practice under this act," and by striking out of section three the words, "and shall be entitled to expert witness fees when summoned or required to testify in any civil action when such testimony relates to matters connected with the veterinary profession," and that when so amended that the bill do pass. VAN FLEET, *Chairman.*

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

ANNUAL MEETING SEPTEMBER 3D, 4TH, 5TH, 1901.
ATLANTIC CITY, N. J.

Headquarters.—The headquarters of the association will be at the Hotel Rudolf, Atlantic City, N. J. There are numerous hotels in the immediate vicinity of "The Rudolf," so that guests may be easily suited in style and price. If members and visitors will communicate with Dr. Wm. Herbert Lowe, Chairman of the Committee of Arrangements, 188–190 Ellison Street, Paterson, New Jersey, stating full particulars as to the accommodations they may wish, all arrangements will be made in advance.

Place of Meeting.—The sessions of the association will be held in the large convention hall of the Hotel Rudolf. This hall is light, well ventilated and quiet, being away from the noise of the ocean.

Banquet.—The annual banquet will be held at "The Rudolf" Thursday evening, September 5th, 1901.

The plans for the Atlantic City meeting of the American Veterinary Medical Association are about completed, and the members of the association will feel gratified to learn that such an excellent programme has been prepared for them. The local committee of arrangement has planned to make the sojourn of all who attend this meeting most enjoyable, and are determined that all shall return to their respective homes sing-

ing the praises of Atlantic City. To those who have been there it is all sufficient to name the place,—Atlantic City; to those who have only heard of its broad walks, its extensive promenade, its wonderful beach and attractive ocean view, the many diversities for the tired mind and weary body, will be made to realize what it means when Atlantic City is spoken of as a pleasure resort after they attend this meeting.

The New Jersey veterinarians are exceedingly anxious that every veterinarian in America shall come to this meeting and enjoy their hospitality; they are proud of the fact that Atlantic City is located in the State of New Jersey; they are further proud of the fact that the American Veterinary Association will be their guest at this famous resort, and they extend a hearty invitation to the veterinarians in all America to be their guests on this occasion. Not only is this invitation extended to the veterinarians, but is intended to include wives, daughters and lady friends, special arrangements being planned for their particular entertainment.

The veterinary societies of New York and Pennsylvania have taken a special interest in this meeting, and have joined with their New Jersey *confrères* in an earnest effort to make the Atlantic City meeting the grandest in the history of our association.

RAILROAD RATES.

The railroad companies operating east of Chicago and St. Louis have granted a convention rate of one and one-third fare for our meeting, which insures a low transportation, one which is still lower than the advertised excursion rates offered by the railroads leading into Atlantic City. Members who live west of Buffalo will find it advantageous to purchase their tickets to that city—for a 10 day limit the fare is a trifle more than the fare one way. Tickets with certificates can be secured from Buffalo to Atlantic City; the return to Buffalo will be at one-third of the regular rate to those who hold certificates. It is possible that at the time of our meeting a still better excursion rate will be in force from Buffalo to Atlantic City, and inquiry should be made concerning same.

THE LITERARY PROGRAMME.

The following is a complete list of papers announced to be read up to date. It is possible that several others may be presented:

"Lameness," by Dr. W. C. Fair, of Cleveland, O.

"Municipal Meat Inspection, with Special Reference to that

in Vogue in Nashville," by Dr. Geo. R. White, of Nashville, Tenn.

"Distemper in the Dog," by Dr. Wm. McEachran, of Windsor, Ont.

"Treatment of Tuberculosis by Salts of Copper," by Dr. D. P. Yonkerman, of Kalamazoo, Mich.

"Contagious Abortion of Cattle," by Dr. G. W. Dunphy, Quincy, Mich.

"Ethics of Veterinary Education," by Dr. R. S. Huidekoper, Philadelphia, Pa.

"Texas Fever in Native S. C. Cattle," by Dr. G. E. Nesom, Clemson College, S. C.

"Skin Disinfection, and Wound Infection," by Dr. V. A. Moore, Ithaca, N. Y.

"Vaccination as a Preventive in Hog Cholera," by Dr. A. T. Peters, Lincoln, Neb.

"Attitude of the Farmer towards the Tuberculin Test," by Dr. Carl W. Gay, Syracuse, N. Y.

"Anthrax and Preventive Inoculation in Louisiana," by Dr. W. H. Dalrymple, Baton Rouge, La.

"The Value of the more Common Surgical Operations on the Horse," by Dr. L. A. Merillat, Chicago, Ill.

"Some Obstructions in the way of Efficient Meat and Milk Inspection," by Dr. C. A. Cary, Auburn, Ala.

"Radical Operation for Bursal Enlargements," by Dr. C. C. Lyford, Minneapolis, Minn.

"The Texas Fever Problem in the South," by Dr. J. C. Robert, Agricultural College, Miss.

"The Diagnosis of Glanders by the Strauss Method," by Dr. Langdon Frothingham, Boston, Mass.

"The Veterinarian on the State Boards of Health," by Dr. S. B. Nelson, Pullman, Wash.

"The Pathological Anatomy and Microscopic Diagnosis of Rabies," by Dr. Adolph Eichhorn, Milwaukee, Wis.

"Stable Hygiene," by Dr, Jas. B. Paige, Amherst, Mass.

The last named paper will be illustrated by some 60 stereopticon views and should prove of the greatest value to all.

During the course of the meeting Dr. A. W. Bitting and Dr. R. A. Craig of Purdue University, Lafayette, Ind., will exhibit a series of 100 photographs on comparative histology.

It is believed that our meeting in Atlantic City offers many things of great value to every veterinarian, and he who attends will be many times repaid for the expense and trouble. True it

is that clients will feel aggrieved if the veterinarian is not at hand when he calls, but he will certainly be pleased when he learns of the veterinarian's return, refreshed in mind and body, and that through association with his brother practitioners from all parts of the continent he is better able to serve the client's interests.

A letter received from Dr. Ruhl states that the West Virginia Association will hold a meeting at Atlantic City during the time of the A. V. M. A. meeting, and that it is expected that a considerable number of West Virginia veterinarians will attend.

Dr. Chas. Higgins writes that a large delegation of Quebec veterinarians will attend the meeting.

SURGICAL CLINIC.

A surgical clinic will follow the close of the regular meeting, commencing at 9.30 o'clock on Friday, September 6th. The clinic will be held on the grounds of "The Rudolf" under cover of a large tent. A series of seats will be so arranged that all present may be privileged to see the details of the operations and demonstrations.

Each clinician will give a short, concise discussion of his respective operation or demonstration.

Friday, September 6.

1. The Classical Demonstration of Major Operations, Dr. John W. Adams, Philadelphia, Pa.
2. Practical Demonstration of the Neurectomies—the neurectomy for cribbing, median, high and low planter, tarsal and metatarsal, Dr. Simon J. J. Harger, Philadelphia, Pa.
3. Ligating the Carotid Artery, Dr. Wm. J. Coates, New York, N. Y.
4. Ridgling Castration, Dr. William B. E. Miller, Camden, N. J.
5. Ovariotomy of the Bitch, Dr. Thos. G. Sherwood, New York, N. Y.
6. Caudal Myotomy, Dr. R. W. McCully, New York, N. Y.
7. Tenotomy of the Flexor Pedis of the Fore and Hind Leg, Dr. Geo. H. Berns, Brooklyn, N. Y.
8. Median Neurectomy, Dr. C. E. Clayton, New York, N. Y.
9. Any Operation that the Committee may select, Dr. A. E. Parry, New York, N. Y.
10. Radical Operation for Bursal Enlargements, Dr. C. C. Lyford, Minneapolis, Minn.

It is expected that a number of operations will be added to this list.

ENTERTAINMENT.

Atlantic City is famous as a seaside resort—with the board walk and piers and their great variety of amusements; trolley rides to surrounding localities; trips to sea and visits to other seaside resorts; fishing and crabbing; bathing at pleasure, and the Committee of Arrangements is making generous preparation for the reception and entertainment of members, visiting veterinarians, and their families. Tickets will be provided by the committee for the different forms of entertainment and amusement.

Special plans for each day's entertainment will be announced when the meeting is convened.

A local committee of prominent Atlantic City ladies will assist our Ladies' Reception Committee in receiving and entertaining the wives, daughters and friends of members and visitors to the convention. Special facilities will be afforded the ladies for a visit to the shopping districts of Philadelphia.

Dr. E. M. Ranck, A. V. M. A. Resident Secretary of Pennsylvania, and veterinarian for the H. K. Mulford Co. of Philadelphia, extends for the company an invitation to the association to visit its large laboratories and vaccine farms, and will take pleasure in entertaining members while in Philadelphia.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

ANNUAL MEETING AT ITHACA, SEPT. 10 AND 11, 1901.

The programme for the above meeting was not in thorough readiness for publication when this number of the REVIEW was ready for the press. Enough can be given, however, to justify the prediction of Chairman Williams that we are to have a meeting far superior to any ever held within the State.

RAILROAD AND HOTEL ARRANGEMENTS.

One and one-third fares for round trip in Central Traffic Association. Members from outside State can buy Pan-American tickets to Buffalo and thence one and one-third fare tickets to Ithaca and return. Visitors from the West desiring to attend the meeting at Atlantic City and Ithaca can, on their return trip, abandon their round trip ticket at Ithaca and pay full fare thence to Buffalo or proceed to Buffalo, visit the Exposition for two or three days and return to Ithaca on one and one-third fare ticket.

Headquarters will be at Ithaca Hotel and those attending would do well to secure accommodations in advance.

President J. G. Schurman, of Cornell University, expects to be present and welcome the society.

President Roscoe R. Bell will doubtless respond.

TUESDAY, SEPTEMBER 10.

8.30 A. M.— Clinic of 2½ hours preceding the assembling of the convention.

11 A. M.— Business meeting.

Afternoon.— "Metritis," John A. Bell, V.S, Watertown.
"Spaying as a Remedy for Vice in Mares," A. H. Ide, V.S., Lowville.
"Supernumerary Digits in a Foal," J. L. Wilder, Akron.
"Punctured Nail-Wounds of Horses' Feet," Geo. H. Berns, D.V.S., Brooklyn.

8.00 P. M.— Illustrated Lecture — "Specific Etiology," Prof. V. A. Moore, Ithaca.
Entertainment by Faculty N.Y.S.V.C.

WEDNESDAY, SEPTEMBER 11.

8.30 to 11 A. M.—Clinic.

11 A. M.— Election of officers.
Case Report — W. H. Salisbury, Clifton Springs.
"The Recent Outbreak of Catarrhal Influenza," Prof. H. D. Hanson, New York.
Illustrated Lecture —"The Utility Horse," C. D. Morris, V.S., Binghamton.

Afternoon— Case Report—V. A. Moore and S. H. Burnett.
"Some Azoturia Experiences," C. J. Mulvey, Moores.
Case Report, Parturient Apoplexy," C. J. Mulvey, Moores.
"Retained Placenta," W. L. Williams, V.S., Ithaca.
Paper (title not given), J. A. McCrank, Plattsburgh.
Paper (title not given), Pierre A. Fish, Ithaca.

OPERATIONS AT THE CLINICS.

The following surgical procedures have been arranged for and the operators secured:

Median and Post-Radial Neurectomy.
Sciatic and Anterior Tibial Neurectomy.
Trifacial Neurectomy.
Castration of Horse (anæsthesia and asepsis) (duplicated).
Spaying of Bitches (duplicated)
Spaying of Cows (duplicated).
Spaying of Mares.
Application of Plaster of Paris.
Removal of Inferior Molar by removing external alveolar plate.
Many other operations now being arranged for.

WISCONSIN SOCIETY OF VETERINARY GRADUATES.

The annual meeting was called to order in the Capital Building, Madison, at 2.30 P. M., Feb. 5, by the President, Dr. A. H. Hartwig.

At roll-call there were present: Drs. H. A. Arpke, S. Beattie, W. G. Clark, B. L. Clarke, H. P. Clute, S. J. Collins, R. E. Cochrane, C. M. Crane, C. Evans, H. F. Eckert, A. H. Hartwig, R. S. Heer, G. Ed. Leech, E. A. McCullough, E. H. Newton, A. J. Nelson, J. M. O'Reilley, J. F. Roub, D. Roberts, E. D. Roberts, Chas Schmitt, E. R. Flack, S. S. Snyder, L. A. Wright.

Visitors—Farmer Miles, Charleston, Ill.; J. M. Armstrong, Richland Centre; A. L. Fosse, Deerfield; L. M. Jargo, Jefferson; J. S. Phieffer, Franklin; Geo. E. Allen, Fort Atkinson; Wm. J. Malone, Mt. Horeb.

The minutes of semi-annual meeting were read and approved.

On motion, the society adjourned subject to call to the meeting of the State Agricultural Society to listen to Dr. H. P. Clute's paper on "Tuberculosis."

After this the meeting was called to order. The Secretary's report of accounts was read and accepted. The Treasurer's report was read and accepted.

The Secretary reported that Dr. C. A. Woodford, of Rio, had paid his dues in full and requested to withdraw, as he had retired from active practice and recommended that he be placed on the honorary list.

It was moved and seconded that Dr. Woodford's name be placed on the list of honorary members and that the Secretary so advise Dr. Woodford. Carried.

The following applications for membership were received:

Andrew L. Fosse (Ontario Vet. Coll.), Deerfield; Jos. T. Hernshein (Univ. Penn.), Kenosha; J. M. Armstrong (Ontario Vet. Coll.), Richland Centre; L. M. Jargo (Ontario Vet. Coll.), Jefferson; W. S. Powell (McKillip Vet. Coll.), Marshfield; Jos. T. Phieffer (Chicago Vet. Coll.), Franklin; Wm. J. Malone (Chicago Vet. Coll.), Mt. Horeb. The Censors reporting favorably and it was moved and seconded that the candidates be elected by acclamation. Carried. The above named gentlemen were declared duly elected to membership.

The Secretary reported that Dr. Chas. Kochne had met with an accident with a corn-husking machine, losing his right hand, except his thumb, and recommended that he be placed on the list of honorary members. On motion, Dr. Chas. Kochne was elected an honorary member of the society.

The Secretary read the report of the committee on collections and several letters received from members in arrears.

Dr. Arpke recommended that those several years in arrears be dropped from the list of members.

Dr. Leech thought that back dues could not be collected under present by-laws, and recommended an amendment to Sec. 12, and that discussion be postponed until the evening session. On motion, carried.

Dr. H. P. Clute, chairman of the Committee on Legislation, reported that the committee had held a meeting in Milwaukee with a committee from the State Board of Agriculture and the Experimental Station in regard to the establishment of a Live Stock Sanitary Board and in regard to proposed changes in present State veterinary laws. Discussed by Drs. E. D. Roberts and Leech. On motion the report was accepted.

Dr. Beattie, Secretary of the Committee on Prosecution of Illegal Practitioners, stated that several had retired from business as a result of the work of the committee and Dr. Hartwig. Discussed by Drs. Leech, Clute, Collins and O'Reilley.

Dr. Leech requested the privilege to revert to new business. There being no objection the request was granted and Dr. Leech requested the Secretary to read an extract from the Chicago *Horseman* of Jan. 29, 1901, in regard to the question of giving rank to veterinary surgeons in the U. S. Army and asked that the communication be officially answered. After discussion Dr. D. Roberts moved that a press committee be appointed to answer this communication and any other matter that might be necessary to be placed before the public. Seconded by Dr. Leech. Carried.

Moved to adjourn to 7:30 P. M. Carried.

Evening Session.—The meeting was called to order at 7:30 P. M. by the President.

The subjeet of collections from those in arrears was taken up and the Secretary was instructed to correspond with those more than four years in arrears and report at the semi-annual meeting. Moved and seconded that those who refuse to pay be suspended at the semi-annual meeting for non-payment of dues. Carried.

Moved by Dr. Leech, and seconded by Dr. Crane, that section 12 be amended to read that no member can withdraw from this society unless his dues be paid in full. Carried.

The President appointed as a Press Committee Drs. G. Ed. Leech, Milwaukee; R. E. Cochrane, Milwaukee; C. Evans, Racine.

Readings of Essays and Communications.—The venerable Farmer Miles, of Charleston, Ill., was introduced by the President and proceeded to tell in his inimitable manner how he came to commence the practice of the specialty which has made his name familiar throughout the world as a castrator of cryptorchids. In describing the operation he divides them into six classes, as follows: No. 1, "flankers"; No. 2, testicle outside abdominal cavity, but so near the inguinal ring that it cannot be felt; No. 3, the testicle and appendices inside the abdomen. This class comprises three out of five of straight cryptorchids; No. 4, tunic and globus minor down, but testicle within the abdominal cavity; No. 5, once straight No. 3, but from some cause an internal hydrocele formed which sometimes contains two or three pints of fluid with the testicle attached to some part of the sack; No. 6, once No. 5, but nature makes an effort to reduce the hydrocele and a hard chury mass is formed having the consistency of a soft orick. The most important part to learn is to study to go slow. In a straight colt six to eight inches of the spermatic cord should be removed with the ecraseur and there will be no trouble with scirrhus cords. A large external opening should be made to provide free drainage. Open this twice daily by inserting the fingers for five days, then allow it to heal. He then proceeded to describe in detail the several operations on the different classes of ridglings. After this he related numerous anecdotes regarding his personal experiences. He has a vast fund of quaint humor and is as interesting as a romance, and it was his aim to make plain all the little secrets of his art that he has prized so highly, and now he is retiring at the age of seventy-

five years and is anxious to benefit the members of the veterinary profession as far as may lie in his power.

On motion a vote of thanks was tendered Farmer Miles for his communications.

It was moved and seconded that Farmer Miles be elected an honorary member of the society. Carried. Farmer Miles was declared elected an honorary member.

Dr. H. F. Eckert read a paper on "Tænia Expansa in the Sheep." Discussed by Drs. Schmitt, Crane, Hartwig, Wright, D. Roberts, Heer, and Leech. On motion the essayist was excused.

Dr. Chas. Schmitt read a paper on "Intussusception and Surgical Treatment," * describing a case occurring in his practice and the operation by means of an appliance resembling the Murphy button. Discussed by Drs. Hartwig, Heer, Leech, E. D. Roberts, Roub, Wright, Arpke and D. Roberts. On motion the essayist was excused.

Dr. E. D. Roberts moved that the society endorse Dr. H. P. Clute for a position in the veterinary corps of the U. S. Army under the Army Reorganization Bill, and the Secretary be instructed to draft a resolution to that effect. This seconded and carried unanimously.

Election of Officers.—The following officers were elected for the ensuing year:

President—C. Evans, Racine;
Vice-President—J. F. Roub, Monroe;
Secretary—W. G. Clark, Marinette;
Treasurer—S. S. Snyder, Cedarburg.
Censors—H. P. Clute, Marinette; B. L. Clarke, Monticello, and R. S. Heer, Platteville.

On motion a vote of thanks was tendered Drs. Hartwig and W. G. Clark for their labors for the society during the past year. Carried.

On motion a vote of thanks was tendered Dr. Beattie for his services in providing for the accommodation of the members at the hotels and arrangements made for the meeting.

After discussion it was decided to meet in Milwaukee during the week of the State Fair, in September.

On motion Drs. D. Roberts, Leech, Ormond, and Cochrane were appointed a committee on arrangements. On motion the society adjourned. W. G. CLARK, *Secretary.*

* Published elsewhere in this number.

CLINICS.

The members met in the stock judging room at the Agricultural Experiment Station, Feb. 6th, at 8:50 A. M.

Farmer Miles, assisted by Drs. Schmitt, Wright, and Collins, spayed two heifers and castrated two cryptorchids.

Dr. H. P. Clute, assisted by Drs. Beattie and Hartwig, performed arytenoideraphy on a driver belonging to Dr. Beattie, afflicted with roaring.

Dr. Beattie reports after a month that the result was successful.

MAINE VETERINARY MEDICAL ASSOCIATION.

A meeting of this association was called to order at 9.10 P. M., at Bar Harbor, July 10, 1901, at Dr. Cleaves' office, with Dr. Joly in the chair. Dr. Pope was chosen Secretary *pro tem.* in the absence of Dr. Freeman. Drs. Joly, L. S. Cleaves, A. W. Cleaves, Blakley, Caldwell, Salley and Pope responded to roll-call.

The committee on clinics reported on cases of last clinic.

Dr. Pope read a paper on "Azoturia," which was discussed at some length.

Dr. Caldwell apologized for being unable to furnish a paper at this meeting.

Some interesting cases were spoken of and discussed.

Voted to hold next meeting in October at Lewiston. Adjourned at 11 P. M. L. POPE, Jr., *Secretary pro tem.*

NEWS AND ITEMS.

DR. J. A. BOVETT, of Chicago, is taking his summer vacation and has left his practice in charge of Dr. C. E. Sayre.

DR. R. C. MOORE, of Kansas City, reports large number of cases of pleurisy during the heated term.

DR. D. E. LUCKEY, State Veterinarian of Missouri, made an official visit to Kansas City, Mo., to investigate an outbreak of glanders, discovered the last week in June.

"I COULD NOT possibly get along without the REVIEW for I use it for a 'handy reference' about as often as I do any text-books."—*N. I. Stringer, D.V.S., Watseka, Ill.*

DR. J. O. LANIGAN, of the Bureau of Animal Industry, Chicago, Ill., spent his vacation on the Lakes, stopping off at Sandusky, Put-in-bay, Cleveland and Buffalo.

DR. CHAS. STEELE, of Kansas City, Mo., has shipped as a

veterinarian in the British transport service from New Orleans to South Africa.

MANY horses are being prostrated with heat in Kansas City, which has endured a heated term for over six weeks, and veterinarians are all busily employed.

MICHIGAN VETERINARIANS COMING TO ATLANTIC CITY.—"Detroit veterinarians are preparing for the September meeting at Atlantic City. I think you will see a fair representation from Michigan."—(*H. F. Palmer, Detroit.*)

A FRIGHTFUL MORTALITY.—The police returns indicate that during the very heated term the latter part of June upwards of 2000 horses were killed or disabled in New York City in six days, most of them succumbing to the awful heat.

A GREAT RECORD.—"Up to the present time over 1500 animals have passed through this treatment [inoculation against Texas fever] under charge of Dr. Francis or his assistants and less than seven per cent. have died."—(*Breeder's Gazette*).

DR. J. L. BURGETT, of Indianola, Iowa, has accepted an appointment in the Bureau of Animal Industry, and is stationed at Chicago, Ill. Dr. Geo. D. Painter of Raymo, Mo., and Dr. Fred. R. Eagle of Kansas City, Kans., have been appointed meat inspectors and assigned to duty in East St. Louis.

Dr. J. E. ELLIS, of Rock Port, Ills., a graduate of the Ontario Veterinary College, class of '98, having been employed by the English Government to take a transport of horses to Port Elizabeth, South Africa, has just returned to his home, when he received a telegram to come at once and take charge of another transport. He will sail at once for South Africa.

DR. A. D. GALBRAITH, Greensburg, Ind., reports that in a case of œdema of the glottis a horse had fallen and was dying from asphyxia, that his breathing had ceased, but that the introduction of a tracheotomy tube and the energetic practice of artificial respiration brought the animal again to his feet, finally making an uneventful recovery.

DR. REPP, of the Veterinary Department of the Iowa State College; Dr. Johnson, of the Iowa State Board of Veterinary Examiners; Dr. Gibson, State Veterinarian of Iowa, and Dr. L. A. Merillat, of the Chicago Veterinary College, were recently called in consultation on an outbreak of glanders among two hundred mules at the Fair View Farm, near Odebott, Iowa.

THE State of Pennsylvania is to be congratulated upon the wisdom of its chief executive in reappointing Prof. Leonard Pearson to the position of State Veterinarian. He is an earnest

worker in behalf of her interests and is at the same time an honor and an example of the veterinary profession, who cannot fail to reflect distinction upon it, and to elevate our position in the minds of stockmen and the public at large.

WE acknowledge receipt of a bulletin of the Louisiana Agricultural Experiment Station, containing report of Dr. W. H. Dalrymple, veterinarian to the Station, on Texas fever, glanders, poisoning of cattle by damaged sweet potatoes, anthrax, black leg, a nervous disease of cattle, a nodular disease of intestines of sheep, etc.

WORSE THAN A RUNAWAY HORSE. — A gasmobile, after traversing the hot streets of Cleveland, Ohio, for two hours, was placed in the storage room where it was usually kept. Without any molestation it exploded, throwing the burning fluid in all directions, and covering an attendant so badly that his life was despaired of at the hospital a few hours later. The building was a total wreck from the flames.

ANTHRAX IN THE MISSISSIPPI DELTA.—Still uglier reports of the havoc wrought by anthrax or charbon continue to come from the Mississippi Delta. It is now said that if its ravages are not checked hardly a mule will be left serviceable by fall, so widespread has it become. Dealers are already looking for supplies to fill the demand that must ensue when colder weather comes.—(*Breeder's Gazette.*)

DR. JOHNSON, an assistant inspector at the Union Stock Yards, Chicago, Ill., was transferred from the Bureau of Animal Industry of the Agricultural Department, to the War Department to act in the capacity of a meat inspector. His duties will consist of inspecting and supervising the preparation of meat products furnished to the War Department by contract. This is a new departure on the line of meat inspection, and the efficiency of Dr. Johnson's work will probably open up a new field for veterinarians.

DR. D. E. SALMON, chief of the Bureau of Animal Industry, contributed an article to the Chicago *Tribune*, for June 30, entitled "Rabies: Its Symptoms and Treatment." He concludes: "The measures necessary for the eradication of rabies are two in number: (1) Destruction of worthless, ownerless, and vagrant dogs; (2) efficient muzzling of all dogs which appear upon the streets or in public places." As a scientific problem, he considers its eradication easy, but as a practical question it is one of the most difficult which confront the sanitarian, the trouble arising not from anything inherent in the work to be

accomplished, but in the opposition of those who own and keep dogs.

VETERINARY AFFAIRS IN MINNESOTA.—The last Minnesota State Legislature treated her veterinarians very handsomely. An appropriation of $25,000 was made for a veterinary building at the Experiment Station; a special bill was passed making an annual appropriation of $19,000 for furthering the veterinary sanitary work of the State Board of Health. Minnesota has now adopted the theory of reimbursement to owners for stock ordered killed on account of infectious disease. This plan is already in operation in case of cattle ordered killed on account of tuberculosis, and will doubtless be extended so as to include other kinds of stock, particularly horses.

"PHYSICIANS AND VETERINARY PRACTICE.—According to a recent decision by an Illinois court, a physician cannot recover for services in the treatment of domestic animals, for the reason that he is not authorized to practice as a veterinarian. The case was one in which a physician who had treated an injured race-horse rendered a bill for $258, was paid $100, and sued for the balance. Veterinarians are not everywhere readily accessible, and as a result of this decision owners of valuable animals may find difficulty in obtaining the services of a physician, which they would doubtless regard as better than none."—(*New York Medical Journal.*) If we cannot endorse the practice of an M.D. treating our patients, we can at least admire the example he sets in the matter of charges.

SLAUGHTERING CATTLE IN HAVANA.—The following extract from *The Lucha*, of Havana, Cuba, relates to Dr. Daniel Le May, Veterinarian to the 7th U. S. Cavalry: "The Mayor then visited the part of the matadero where the cattle are slaughtered, and as it was the hour of the day when cattle are killed, was able to see the act of slaughtering carried out. Mr. D. Le May, chief veterinary surgeon of the island, was in the slaughter-house at the time investigating a complaint received in the sanitary department against those in charge of the slaughter-house. This complaint proved to be false. Mr. Le May told the Mayor that he wished to work in harmony with the municipal authorities, assuring him that whatever recommendation that he would care to make he would previously submit to the consideration of the Ayuntamiento."

DOG FOOD FOR THE ARCTIC EXPEDITION.—Spratt's Patent (America), Limited, whose animal foods are known the world over, were especially gratified in having their product selected

over all competitors for the Baldwin-Zeigler expedition. The following extract from a letter will be of value to those interested in the feeding of dogs: "Referring to the selection of your dog cakes by Mr. Evelyn B. Baldwin, I beg to advise you that my understanding is that these cakes will be used in making his trip over the ice in keeping his dogs in good condition for their final effort to land him at the North Pole. I take pleasure in advising you that while samples were submitted to Mr. Baldwin by every manufacturer in this and other countries, including all known kinds of dog foods, yours were selected on account of their superiority and on account of the success Mr. Baldwin and other Arctic explorers experienced in the former use of your goods. Mr. Baldwin is now about to leave Tromsoe, Norway. I can only add that it would be impossible for me to put Mr. Baldwin's appreciation of your foods in too emphatic a manner. Yours truly, HARRY BALFE, with Austin, Nichols & Co., N. Y. C."

THE LONDON TUBERCULOSIS CONGRESS.—THE AMERICAN VETERINARY PROFESSION WELL REPRESENTED.—A special cablegram to the New York *Herald* of Sunday, July 21, says: "LONDON, Saturday—London is the medical Mecca of the universe to-night. The city is entertaining what is pronounced to be the most distinguished assemblage of the world's physicians and surgeons of modern times brought together to attend the international Tuberculosis Congress, which opens in Queen's Hall on Monday, under royal patronage. America is well to the front. Next to the British representatives accredited to the congress her delegation is the largest here. Among the American representatives are Professor William Osler, of Johns Hopkins University; Dr. Herman Biggs, of New York; Professor George Dock, of the University of Michigan; Professor Liautard, delegate of the American Veterinary Medical Association; Mr. Austin Peters, of the Massachusetts Board of Cattle Commissioners, and seven representatives of the American Climatological Association; Dr. Ravenal, of the Pennsylvania Society for the Prevention of Tuberculosis, and five representatives of the American Tuberculosis Congress. The American Medical Association is officially represented by Dr. Allen T. Haight, of Chicago, and Dr. Judson Doland, of Philadelphia. The Americans read papers, and led discussions in almost every special phase of their congresses' deliberations, and they are expected to monopolize the scientific aspect of cattle tuberculosis, which fills a prominent place in the congress' programme. After the Duke of

Cambridge, in behalf of the King, has formally welcomed the delegates on Tuesday afternoon, Professor Koch, of Berlin, the recognized dean of tuberculosis experts, will open the pathological section of the congress. Many of his professional brethren expect the great discoverer of the phthisis bacilli to announce a sensational consumptive theory rivalling in importance his previous achievements. Professor Brouardel, of Paris, it is also anticipated, will make an important contribution to medical science. Dr. Haight says: "None is able to forecast what tremendous possibilities exist in this unprecedented gathering of medical wise men. So far as I am able to judge the sensational developments will be along the line of prevention rather than the cure of tuberculosis, particularly the prevention of the disease in cows and other cattle the source of food supplies. The programme reflects marked credit on the promoters of the congress. Not only have they secured the presence of delegates from fifteen countries outside the United Kingdom, but they have provided for the expression of ideas equally diversified. One hesitates to predict in these days of daily discovery what such a conclave may evolve. As the great caterer of the world America looms large in the scientific investigation of the causes and effects of tuberculosis. My fellow delegates represent the brainiest thought of the country on the particular subject which the congress is called upon to consider. I am certain that they will give a good account of themselves when the roll of ideas is called."